NOVEMBER 10, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

Equipment Edges Up

Makers of capital goods are finding orders easier to get but still don't expect a boom before 1960 . . . Page 75

New Import Rules Coming

Damaged by imports? U. S. has new regulations for those seeking relief . . . Page 78

How To Save Time

Basic concepts, not gimmicks, will solve this tough management problem . . . Page 86

Rotary Forge for Profit

Precision process trims machining costs of cylindrical parts . . . Page 122

Plastic Tools Gain Uses

Production people are finding them valuable. New formulas on scene . . . Page 138

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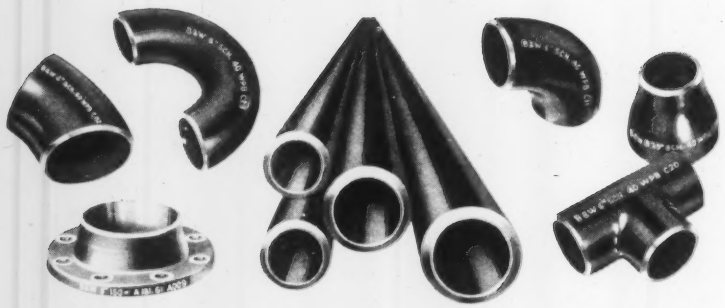


"B&W's Mr. Tubes gives me the 'extra' help I need to engineer for profit!"

YOU can ENGINEER FOR PROFIT by keeping your piping costs as realistic as possible. Specifying and buying welding fittings and pipe, especially the alloys, can be pretty tricky. Admittedly, most alloy jobs are, inherently, both complex and expensive. Any error in judgment can throw costs way out of proportion. That's why it pays to call in B&W's Mr. Tubes. Put him on your planning team . . . he's the man that can help make your specifying decisions more certain.

As your local B&W representative, Mr. Tubes is well qualified to give you the kind of technical help you need to hold your alloy piping costs to a minimum. He can offer dependable help in selecting the most economical grades and sizes best suited for your end-use applications.

And, through Mr. Tubes, you can save both time and money by utilizing B&W's "one-source" supply. You get a matched piping system — both pipe *and* fittings, in the materials you need — when you need them. Buying and delivery are more closely controlled, too. Check with Mr. Tubes on your next job. He can be reached at any B&W Tubular Products Division District Sales Office. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pennsylvania.

B&W

TUBULAR PRODUCTS DIVISION

TA-8032-G5

Seamless welding fittings and forged steel flanges, seamless and welded tubular products, solid extrusions — in carbon, alloy, stainless steels and special metals.

Tool Steel Topics

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

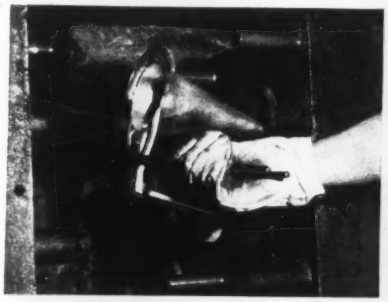
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

Wind shields for 120-mm shells die-cast with Cromo-High V tool steel

Each piece has to be virtually perfect when you're die-casting aluminum wind shields for 120-mm shells. Tooling up for a job like this calls for a hot-work steel that will turn out high-quality castings and at the same time keep production costs low.

Bethlehem has several grades of hot-work tool steel which could be considered for such a highly specialized application.



The die caster weighed all the facts with Bethlehem's local tool steel distributor. Together, they came up with an excellent tool steel for jobs of this sort—Cromo-High V.

Cromo-High V is our 5 pct chrome-moly hot-work tool steel, containing 1 pct vanadium. A grade that has proved its stubborn resistance to wash and erosion, it also has the stamina for long runs.

Cromo-High V is uniformly annealed for easy machining. It has good center density and grain refinement, and is free from porosity. And there's little chance of cleavage cracking when adequate radii are used in the die, and the steel is properly heat treated.

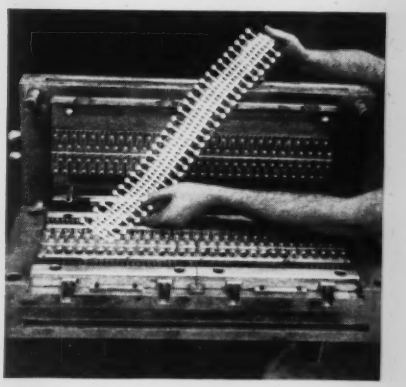
A trial run with Cromo-High V is the best way to learn how good a tool steel it really is. Your local Bethlehem tool steel distributor either has it in stock, or can get it delivered to you quickly.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Air-quenching means longer service life for hot-work tools

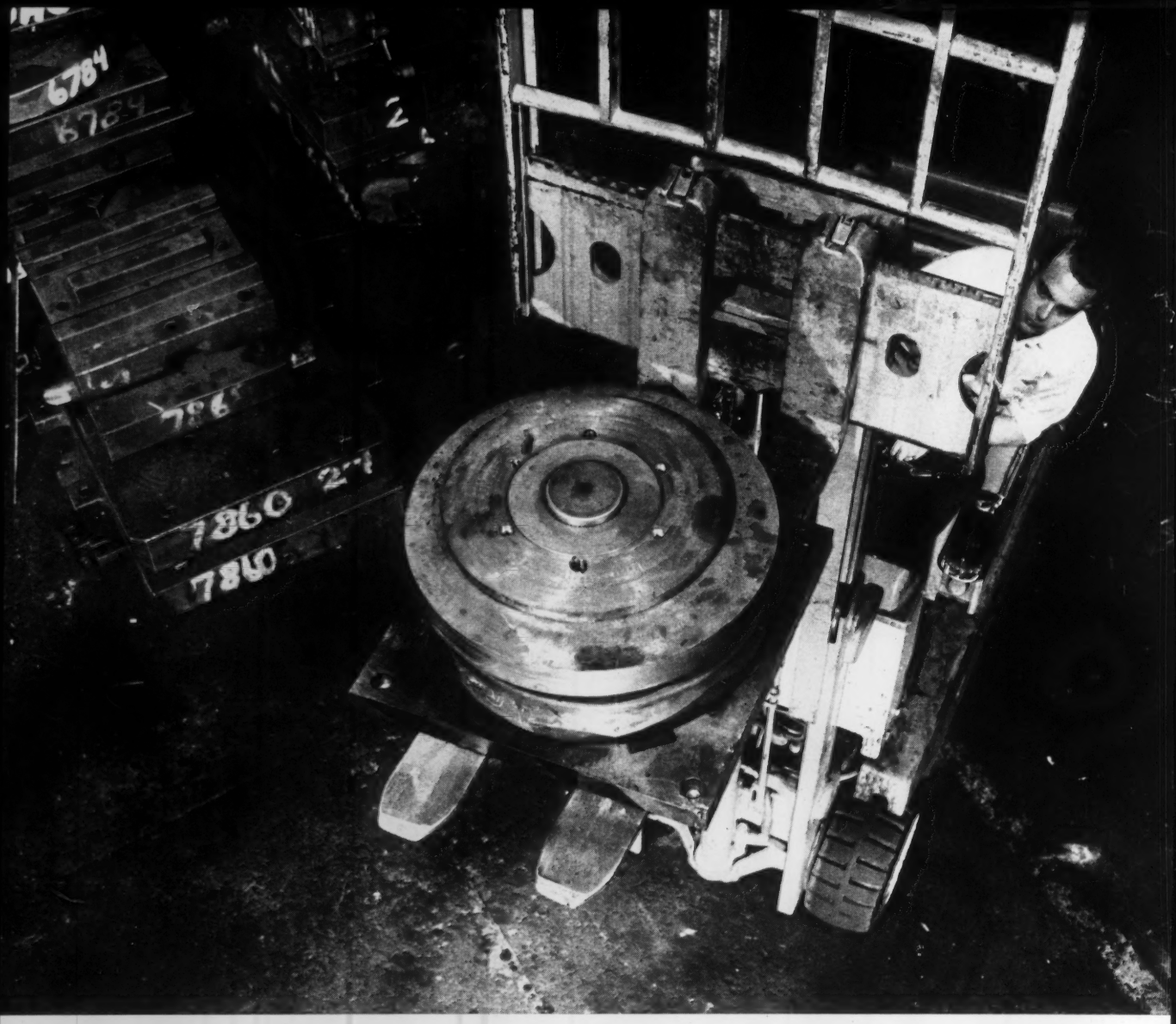
Most hot-work tool steels can be hardened by quenching in oil or air. Because of convenience in handling, and to avoid excessive scale, it is often preferable to quench some hot-work tools in oil. However, air-quenching is considered better practice, for it produces lower residual stresses than when tools are liquid-quenched. Since heat-check failures develop from surface stresses which are produced in service, the presence of residual stresses in the tool can lead to premature failure.

Tools having low residual stresses are best suited for long service on hot-work applications. That's why air-quenching is usually best for hot-work tools.



Plastic Beads Molded with Duramold B

Here is an injection mold, with 120 cavities, used by R. A. Koegl Stamp & Die Works, Inc., Hillside, N. J., to produce Plastic Poppit Beads. The steel was supplied by Ackerlind Steel Co., Inc., N. Y. Duramold B is our oil-hardening chromium type of plastic-molding die steel, containing an addition of boron. Its annealed hardness of 100 max Brinell assures ease in cold-hobbing and its alloy content gives it high core strength.



His trip to the "bank" just saved someone $15,000

This die being "withdrawn" from COMMERCIAL'S "die bank" of more than 20,000 available die components will save someone the cost of completely new dies—will mean that a COMMERCIAL stamping customer will be able to get custom produced parts at a substantial saving in tooling expense.

Every day units from our extensive "die bank" are being utilized to produce an infinite variety of stamped component shapes for many industries. Very often these existing die components are combined with partial new tooling to produce custom stampings to meet the most specialized requirements.

Our engineers working closely with a customer are frequently able to suggest design modifications which make possible even greater customer saving through the most advantageous use of die components already in COMMERCIAL'S "die bank". Thus, many times stampings are made available free of tool or die charges.

Modern press equipment—100-ton to 2000-ton capacity—bangs out more hits per hour and contributes to lower unit cost for medium to heavy stampings. And, over 30 years of experience in the forming of metals has developed the skill which makes the toughest of stamping jobs look easy.

Just a blueprint, sketch or prototype of your part in the hands of our engineers could be the key to important savings on your very next job. Address Commercial Shearing & Stamping Company, Dept. L-46, Youngstown 1, Ohio.

Specialists in the shape of things to come

CUSTOM STAMPING • UPSET FORGING • ROTOFORMING

COMMERCIAL
shearing & stamping

You can realize

BIG PRODUCTION SAVINGS

with **HOBART'S** NEW
Air-cooled **MIGARC** *gun*

USERS REPORT PRODUCTION SPEEDS INCREASED TO 200" PER MIN. . . . AND MORE!

Hobart's Migarc process is a gem of operator convenience, simplicity and low cost. With it you can attain radically increased production speeds on mild steel welding.

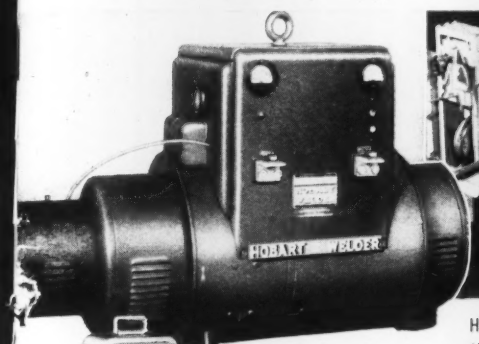
This newest and most advanced method of metal-inert-gas shielded arc welding features three Hobart components: a constant voltage power source, an automatic control and wire feed, and an extremely simplified gun.

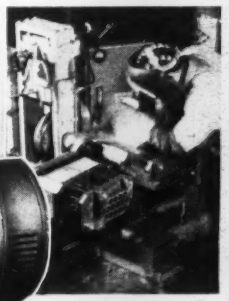
Three models of the CV power source provide 500, 900, and 1200 amps respectively on a 100% duty cycle at 3 to 48 volts. The control eliminates troublesome, delicate, costly gadgets. Its wire feed mechanism is extremely powerful. The gun is air-cooled, enabling the operator to work unencumbered by heavy water lines, or leaky connections. Inexpensive CO_2 is used for the shielding gas.

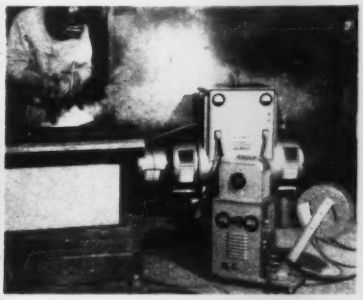
Here's just one of many good examples where Hobart's Migarc process greatly increased production.

Parish Pressed Steel, a division of Dana Corporation in Reading, Pa., fabricates auto frames. The trend to lower bodies, hardtops, and no center pillars demanded more box sections per frame. Weld inches soared. The cost of adding manpower and conventional welding equipment to handle the increase was prohibitive and impractical. Hobart's Migarc process was the answer. According to J. W. Holzman, Assistant Chief Engineer for Parish, it solved the majority of their problems.

It will pay you to get complete information on Hobart's Migarc process. Do it today while the thought is still fresh in your mind. No obligation, of course!







Hobart's Migarc process is versatile. It can be used in many locations to suit any application. The gun, control and wire feed unit can be separated, then stratigically mounted for single station operation (above left photo), or they can be used where portability is a necessity (photo above right).

Perfect low cost simplified setup for CO_2 welding: "Powromatic" cv power source, and control wire feed Migarc unit.

New HOBART air-cooled gun simplifies operation

All connecting leads extend from back of the gun. Cables are secured by twist-lock connectors.

The nozzle housing can be easily removed by hand without taking gloves off. An ordinary wrench turns hex nut to remove the nozzle.

One-half turn separates gun from gun end. The operator can easily and quickly make wire feed corrections without removing gloves, or using special tools.

HOBART BROTHERS COMPANY, BOX ST-118, TROY, OHIO, Phone FE-21223

"Manufacturers of the world's most complete line of arc welding equipment"

Find Your Nearest Dealer in the 'Yellow Pages'

Fill out and mail this handy coupon for complete details on Migarc and other automatic and semi-automatic arc welding processes

HOBART BROTHERS COMPANY, BOX ST-118, TROY, OHIO

☐ Please send me complete details on how Hobart's Migarc process can increase my production. Also include data on:
☐ "Powromatic," ( ) 500, ( ) 900, ( ) 1200 amp. size ☐ Migarc control, wire feed unit
☐ Automatic Submerged Welding ☐ Semi-Automatic Arc Welding

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HOW ZINC-COATED STEEL SHEETS

KEEP PRODUCTS–AND MANUFACTURERS–LOOKING YOUNG

Today, it's almost axiomatic that the more zinc-coated steel you put to work for you, the more freedom your products will have from corrosion—and the more freedom you'll have from customer kicks about corrosion and corrosion-caused maintenance costs.

That's why it pays to use zinc-coated steel sheets in the products you manufacture (such as light troffers, metal ceiling tiles, baseboard heating panels, sliding door hardware, etc.).

Look at the formability, for example. With either electrolytically zinc-coated steel sheets, or continuous process zinc-coated sheets, the tight coating stays tight through the severest fabrication operations. How about corrosion prevention? It's long-lived, uniform, relentless. First cost is low. Maintenance costs are nil. And the results are a lasting credit to your product and your reputation. How about paintability? Electrolytic zinc-coated steel surfaces, chemically treated, are unexcelled for painted products. It lets paint dig in and hold its unbroken smoothness and beauty for keeps.

In electrolytically zinc-coated steel, the name that stands for bonus performance is Weirzin. In continuous process zinc-coated sheets, it's Weirkote. Let us show you how Weirzin or Weirkote will keep your products—and you—looking young.

Write for informative brochure on each today. Weirton Steel Company, Dept. B-24. Weirton, West Virginia.

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This Week in STEEL The Metalworking Weekly

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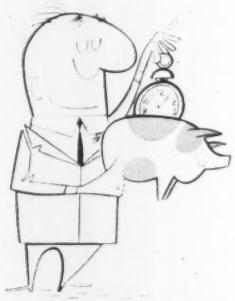

Seven tips busy executives can use to save time are outlined by consultants.

WINDOWS OF WASHINGTON 82

Here's how some results of Nov. 4 elections could affect your operations in the metalworking field.

MIRRORS OF MOTORDOM 89

You can compare specifications and prices before you buy your '59 car. Table includes accessory prices.

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Economists see prosperity but no boom for '59. Gross national product and industrial production to regain losses.

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SUPER DUTY
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4. RESISTANCE TO METAL WASH
5. RESISTANCE TO THERMAL SHOCK

With the timely introduction of Mullitex D, Walsh now offers the Steel Industry a more complete line of Missouri-Quality super duty refractories. For all the money-saving facts, contact the nearest Walsh representative, or write for full particulars.

APEX, Extra Duty Stiff Mud Deaired Fire Brick, manufactured from super duty clays. Noted for resistance to slag penetration and metal wash.

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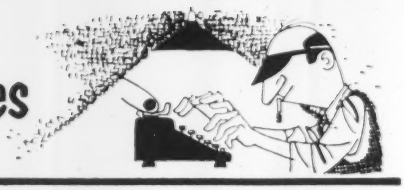
FOR OVER 60 YEARS MANUFACTURERS OF HIGH GRADE REFRACTORIES

behind the scenes



Business Press Prose

Today marks the close of National Can Opener Week and the beginning of American Education Week, and we can't think of a more auspicious time to reveal some of the remarks delivered by Howard G. Sawyer before a recent NBP Regional Meeting at the Sheraton-East Hotel in New York. Mr. Sawyer is vice president of James Thomas Chirurg Co. Inc., Boston, an advertising organization. So when he stood before that assembly of National Business Publishers he probably grinned to himself. Everybody, with the possible exception of the Navajo lady whom we saw a few weeks ago driving sheep along the edge of the Grand Canyon, knows that advertising agencies have the ear of publishers. Those ranks of solid publishers might have intimidated Shrdlu, but they didn't scare Howard a bit. He looked them right in the eye, then lowered the boom.

"The business press," said Mr. Sawyer in beautiful pear-shaped tones, "is contaminated with the worst writing of any branch of contemporary communications. Of course, it's clear that writing is a dying art. Hardly anyone under 45 knows how to spell or how to punctuate, and the ability to structure a graceful sentence is as extinct as the waltz."

We weren't privileged to hear Mr. Sawyer, but we read a copy of his speech, and are prepared to submit that he wasn't just beating his gums. Much of his constructive criticism is painfully true, but that doesn't mean that the business press isn't aware of its literary shortcomings. Business paper readers don't expect to run into material couched in the style of Thomas Mann, Ernest Hemingway, Aldous Huxley, or William Faulkner, but they are entitled to a comparable measure of intellectual consideration.

Self-Improvement Constant

Editors of STEEL are always seeking to improve their product. Copy Editor Harry Chandler, the prairie pundit, frequently acts as moderator, procurator, and generator at editorial staff meetings. Some of the younger editors regard him as an alligator, too, particularly when he shows all his teeth, which he does automatically at the sight or sound of cliches, bromides, redundancies, and the like.

STEEL's editors package their product for you. They realize that you are a busy metalworking manager who reads STEEL to get information and ideas that will help you do your present job better and improve your chances for advancement. Because you're pressed for time, you are a headline reader. That means that the editors have only a few seconds to get through to you. If the head doesn't sell you, the chances are you won't read the story—unless, as the bad angel sitting on our left shoulder whispered, the story involves a paternity suit against a television personality, a peeping Tom in a sorority house, or a Republican running for high office in Mississippi.

Perhaps STEEL doesn't resemble those little literary quarterlies that used to flutter about the country every leap year, but we think it is considerably more valuable. Fundamentally and in the final analysis, STEEL bluntly tells you how to save money. The literary quarterlies taught you how to say "C'est ca!", how to sneer politely at Henry Wadsworth Longfellow, and how to appear interested in a rose is a rose is a rose.

Worry, Worry, Worry

Vision Inc., international publishers and specialists in information and training services for management in industry, business, and education, recently broadcast a squib on worry, the occupational disease of our time. The Vision people are headquartered in New York, where they have a division called the Bureau of Business Practice, from which they quote frequently. Last month, Vision reveals, the bureau told them that 75 per cent of the world's population worries.

Here is what Vision tells us the bureau tells us a well-known doctor-writer tells us what most people worry about: Things that never happen, 40 per cent; things that can't be changed by all the worry in the world, 30 per cent; needless health worries, 12 per cent; petty miscellaneous worries, 10 per cent; real, legitimate worries, 8 per cent.

Obviously, worry is a luxury few people can afford. It is a perfect exercise in futility. It not only wastes time and energy but spoils dispositions and takes the fun out of living. (This reminds us we ought to worry about our job!)

Cutting Up Again

You have a single, plain carpet in the form of a rectangle, 16 by 9 ft. You wish to spread this on the floor of a square room, which is 12 by 12 ft, which is fortunate, too, because it is the same area as the rug; if it weren't, we'd be up a tree. The carpet must be cut into pieces to make it fit. Your problem is to tell us the least number of pieces into which the carpet can be cut to fit the square floor.

Shrdlu

(Metalworking Outlook—Page 69)

NEW ELPAR TITAN

Fork and Ram Trucks

Capacities: 15,000-20,000 lbs.

Photograph of 16,000-pound-capacity model illustrates compactness and visibility provided by ELPAR Titan series.

ALL NEW.. unsurpassed compactness, visibility, speed, safety

The electric-powered ELPAR Titan R-12 series offers an unequaled combination of features:

For Your Production Department,
NEW OPERATING EFFICIENCY

Box car maneuverability . . . moves easily through 7-foot freight car doors . . . operates in confined areas . . . high travel and lift speeds.

For Your Operator,
NEW OPERATING EASE

"Picture window" vision forward . . . completely unobstructed view to rear and sides . . . dual controls . . . power steering.

For Your Safety Department,
NEW "TRI-SAFE" BRAKING SYSTEM

Safe stops in *every* situation . . . three independent brakes—dynamic, hydraulic and mechanical—*act in sequence* and are controlled by a *single toe bar* extending the width of the operator's compartment.

For Your Maintenance Department,
TRADITIONAL ELPAR DEPENDABILITY

Uprights are forged from high carbon steel . . . spherical self-aligning bearings on inner uprights and elevator reduce wear . . . high mounting of tilt cylinders eliminates upright twist and side sway . . . battery is easily accessible.

Get complete details . . . SEND FOR TITAN SERIES BULLETIN and "TRI-SAFE" BRAKING BULLETIN

ELPAR ELECTRIC TRUCKS

THE ELWELL-PARKER ELECTRIC COMPANY

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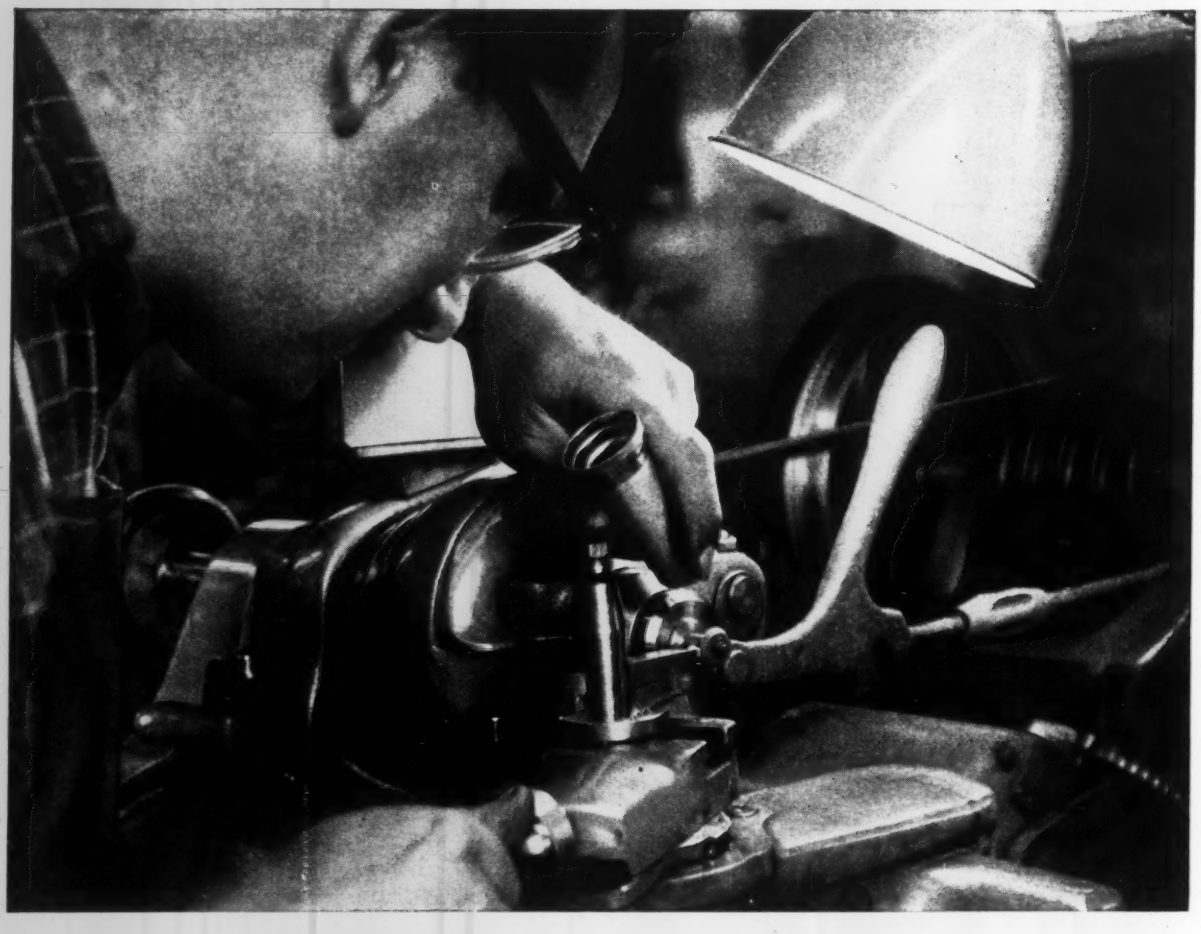
Twice the Life . . . 1/3rd the Operating Costs



Tolerances .0002 with Cities Service Cutting Oil!

If you think the days of the precise craftsman are a thing of the past, you ought to take a tour through Arch Gear Works at North Quincy, Massachusetts.

There, you'd see some of the nation's foremost specialists in precision gearing going about their jobs with the most painstaking accuracy.

Such accuracy is absolutely vital at Arch Gear Works, because this unusual firm produces amazingly intricate mechanisms involving as many as 50 tiny precision gears... gears that automatically control the speed and torque of sensitive electro-mechanical devices.

In this highly complex, precise operation, Cities Service is the choice of cutting oils for a very simple reason: Cities Service Cutting Oils deliver .0002 tolerances and the finest possible finish. Few oils can match this performance.

With equally outstanding results, Arch Gear Works uses Cities Service Anti-Corrode to protect its gears during shipment, and Cities Service Pacemaker Oils for general lubrication and hydraulic machinery.

But you needn't operate a gear works to prove that Cities Service lubricants are geared to *your* operation. Simply talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N.Y.

Specialist Assembles Tiny Gear. Some mechanisms contain as many as 50 tiny precision gears—all produced with the aid of Cities Service Cutting Oils—and protected during shipment by Cities Service Anti-Corrode.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

A PREVIEW

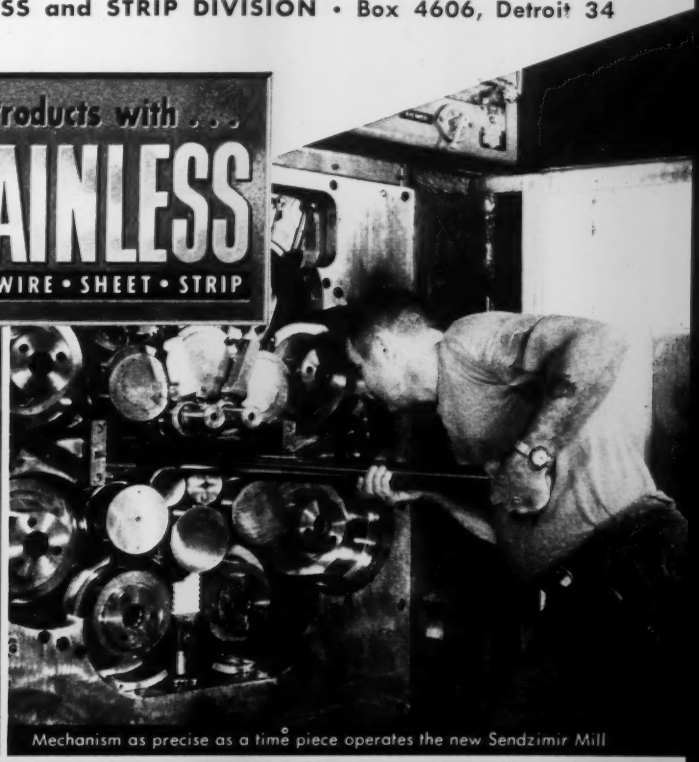
OF A NEW SOURCE OF QUALITY STAINLESS SHEET & STRIP

Steel buyers everywhere will welcome J & L's new source of constant high quality stainless sheet and strip. The completely new stainless mill, located at Louisville, Ohio, has successfully passed through its shake-down runs and is now ready for *full* capacity production.

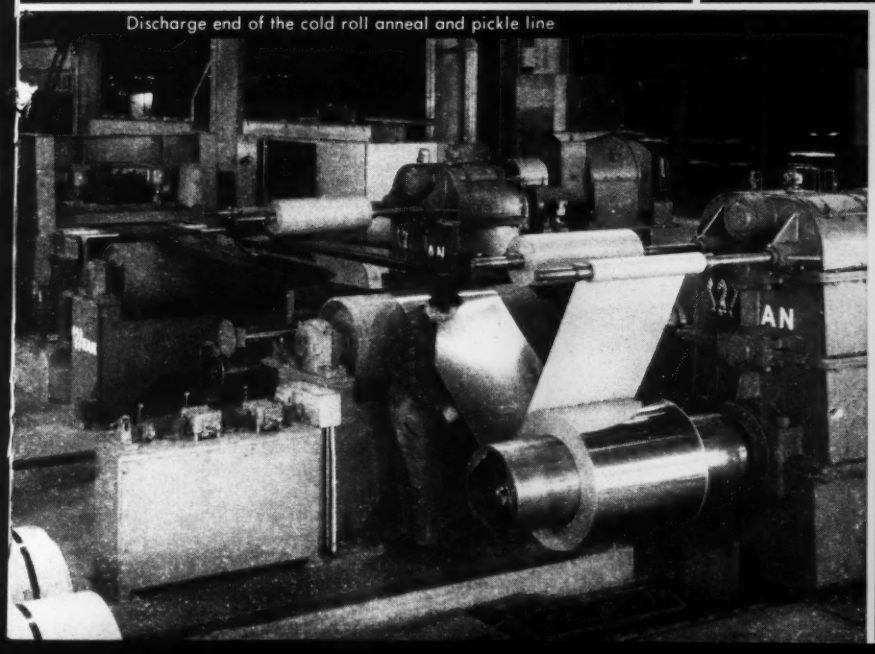
With the completion of this integrated cold rolling operation, J & L is equipped with the finest facilities in the industry to produce stainless steel strip and sheets to extremely close tolerances in widths up to 48 inches. *Write for your copy of J & L's Sheet and Strip Manual today.*

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Box 4606, Detroit 34

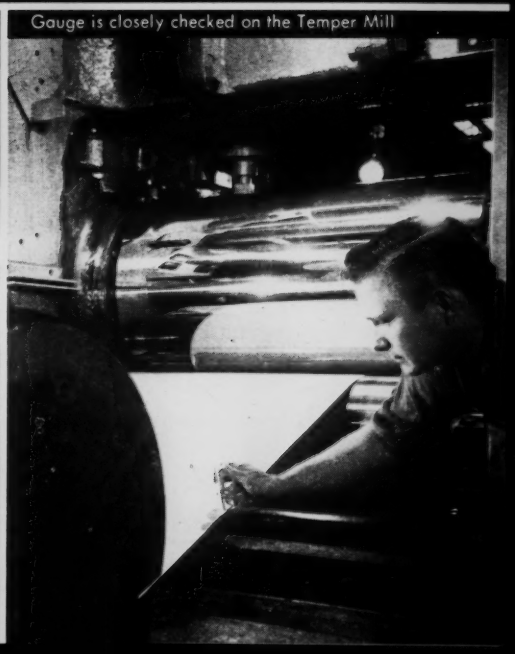
The 50" Slitter cutting stainless coil into strip



Mechanism as precise as a time piece operates the new Sendzimir Mill

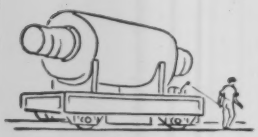


Discharge end of the cold roll anneal and pickle line

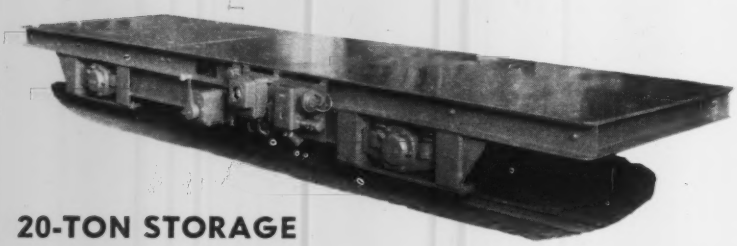


Gauge is closely checked on the Temper Mill

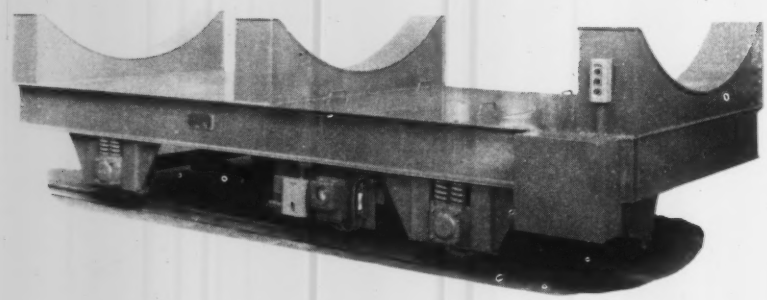
ATLAS SAFETY TYPE "SHORT HAUL" TRANSFERS



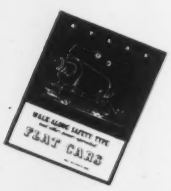
Atlas Safety-Type Transfers provide safe, low-cost service. Available with gas or diesel-electric, cable reel, or storage battery power. Atlas Transfers handle any type of load . . . and the heavier the load, the greater the savings.



20-TON STORAGE BATTERY FLAT CAR



20-TON STORAGE BATTERY WITH CRADLE FOR PIPE



Request "Walk-Along" Bulletin 1283

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

LETTERS TO THE EDITORS

Requests Work Sampling Aids

We are in the midst of selling and finding ways to use work sampling. I would like to secure any past articles or information available on the subject especially with reference to use on indirect labor. May I have three copies of "Getting More from Men and Machines" (Oct. 6, Page 44)?

I would also appreciate a copy of "To Boost Productivity, Consult Your Employees" (Sept. 29, Page 65). This article has some excellent justifying information.

W. D. Willis
Industrial Engineer
Sherwin Plant
Reynolds Metals Co.
Corpus Christi, Tex.

Ideal Tool

Please send me a copy of the Metal Selector appearing in the Oct. 20 issue (Page 165). It is an ideal tool!

Ralph T. Jenkins
Secretary-Treasurer
Ralph Mfg. Co. Inc.
Wadsworth, Ohio

• • •

This compilation is a good one and we would like to use it in our business as we have done in the past—to great advantage.

Howard H. Wilder
Manager
Engineering Sales
Vanadium Corp. of America
Chicago

• • •

You deserve a pat on the back for including the informative and most timely Metal Selector in your Oct. 20 issue. You are indeed keeping pace with progress.

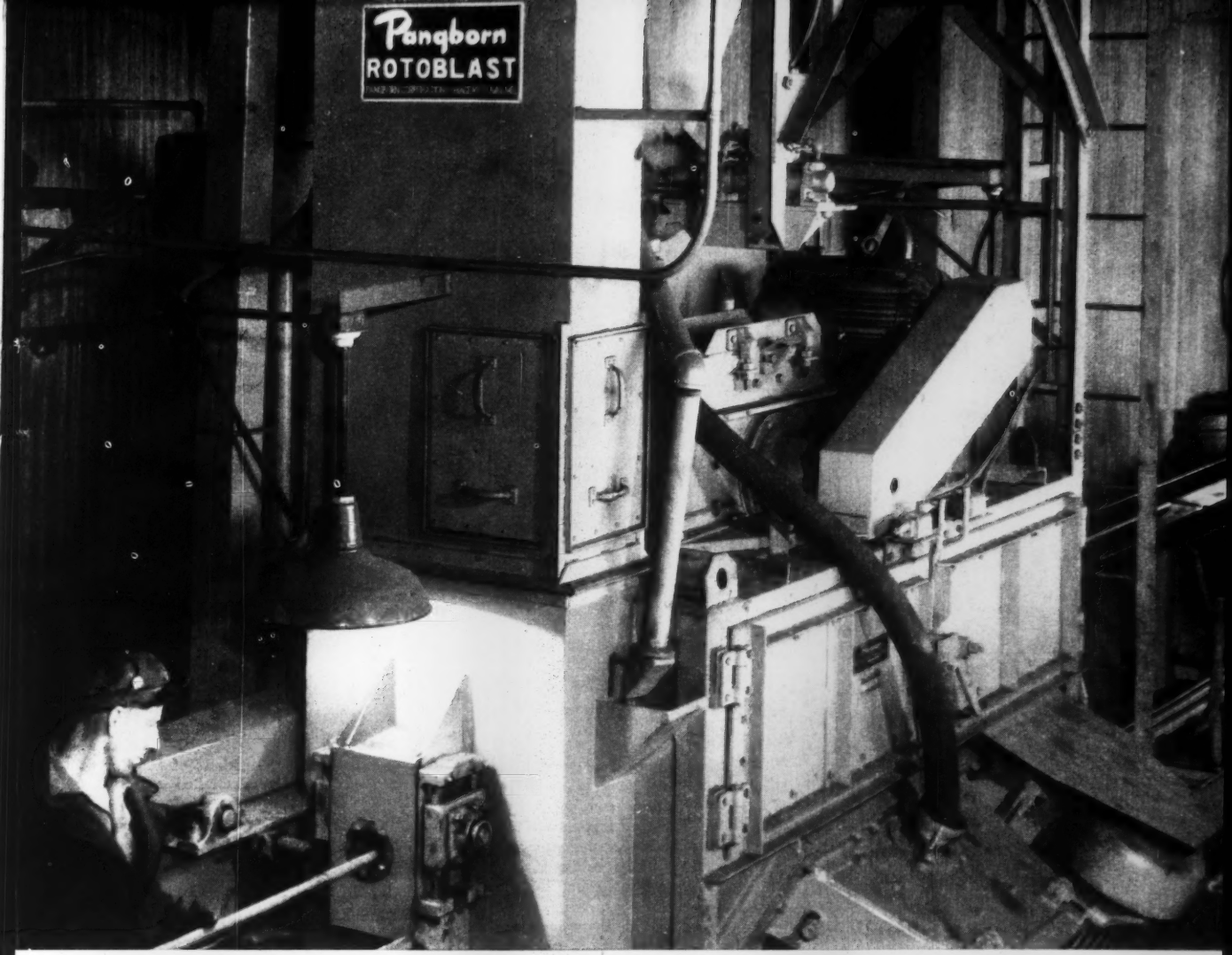
William F. Horsch
General Manager
William F. Horsch Co.
Grosse Pointe, Mich.

Purchasing Article 'Excellent'

"Purchasing for Profit" (Oct. 13, Page 89), is certainly an excellent job.

I know your readership includes a good share of top management in the metal-

(Please turn to Page 12)



High-speed Pangborn Rotoblast Descaling Machines eliminate pickling, permit automation in wire drawing!

THOROUGH . . . Rotoblast descaling eliminates the need for pickling . . . rod can be drawn without further cleaning.

WORKABLE . . . Rotoblasted finish provides excellent base for lubricant or drawing compound, fine bonding surface for coating.

VERSATILE . . . Pangborn Descaling Machines handle cut lengths or coils, designed for single or multiple strand descaling.

LOW-COST . . . Operating costs and manpower requirements are held to a minimum.

CONTINUOUS . . . These machines eliminate multiple handling necessary for batch descaling and coating operations, fit into fully automated wire drawing production line.

FOR DETAILS . . . talk to your Pangborn district engineer or write PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Maryland.

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Pangborn ROTOBLAST®

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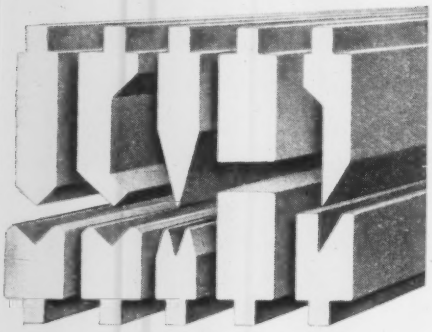

CHICAGO®
*Induction Hardened** PRESS BRAKE DIES

This organization of local distributors offers immediate delivery on many CHICAGO *induction hardened* press brake dies. These stock dies are economical, and the quick delivery saves time in tooling. They are available in any length from 4 to 12 feet in increments of 2 feet.

Stock dies are used for a surprisingly large variety of bending operations. And, with CHICAGO *induction hardened* dies you get bonus performance and increased die life at no extra cost. Remember, these dies can be used in any make or size of standard press brake.

On your needs for press brake dies, call your nearest distributor listed here. With Bulletin D-457 you can order by number. Ask for a copy.

*Induction hardening is a special, high-frequency process used to harden the wear surfaces of CHICAGO dies. Field reports on CHICAGO *induction hardened* dies show up to ten times longer life than conventional press brake dies.

CHICAGO DREIS & KRUMP

Press Brakes, Press Brake Dies
Straight-Side-Type Presses

Hand and Power Bending Brakes
Special Metal-Forming Machines

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MANUFACTURING CO.
7458 South Loomis Boulevard
Chicago 36, Illinois

LETTERS

(Concluded from Page 10)

working industry. Most of the things you cover in your article are familiar to members of the National Association of Purchasing Agents, but it is helpful to have management's attention called to these facts.

On behalf of the membership of the Purchasing Agents' Association of Detroit, I would like to thank you.

J. W. Ruff
President
Purchasing Agents' Association of Detroit
Detroit

• • •

Your interesting article is certainly "worthwhile reading."

W. T. Gabbett
Purchasing Agent
Caterpillar Tractor Co.
Aurora, Ill.

• • •

Will you send us 3000 reprints?

John J. Carley
Director of Public Relations
Profit Counselors Inc.
New York

Interest in Paint Dipping

Please send me the address of Harding Chemical Corp. I am interested in learning more about the process of paint dipping described in a Technical Outlook item, Oct. 6 (Page 71).

Carl Halpern
Vice President
Electro-Chemical Engraving Co. Inc.
New York

• *Harding Chemical Corp.'s address is 10610 Gratiot Ave., Detroit 13, Mich.*

Bridging Industry Slump

Your article, "Rebuilt Tools Bridge Industry Slump" (Oct. 6, Page 39), greatly interested us. May we have five copies?

Charles R. Fraser
Controller
C. O. Hoffacker Co.
Cranston, R. I.

Appropriate Editorial

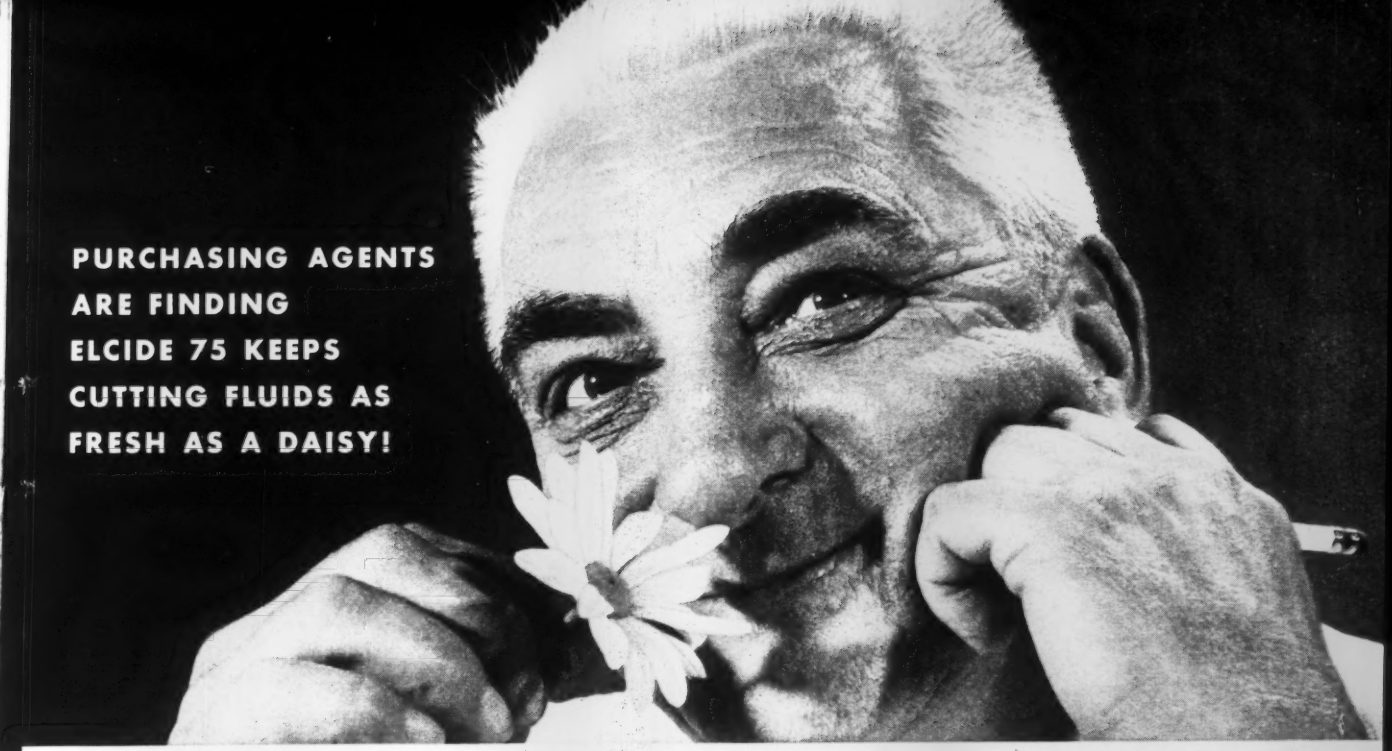
Your editorial, "How's Your Corporate Image?" (Sept. 22, Page 35), seems quite appropriate for our organization. May we obtain 65 reprints for distribution to our key management people?

Kent S. Putnam
Advertising Manager
Associated Spring Corp.
Bristol, Conn.

Taming Supermetals

A copy of your article on "Vacuum Casting Tames Supermetals" (Oct. 20, Page 191), will be much appreciated.

Philip A. Repino
Plant Engineer
Lebanon Steel Foundry
Lebanon, Pa.



ELCIDE 75™ extends the life of soluble oil emulsions

. . . lowers operating costs three ways

Less oil concentrate is purchased because standard duty emulsions last far longer when treated with one ounce of Elcide 75 per four gallons of emulsion.

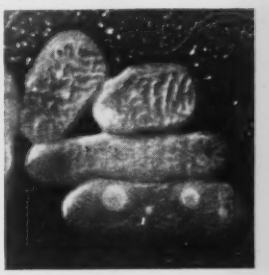
Labor costs are reduced because less non-productive time is spent recharging machinery. The labor costs of disposal also decrease because there is much less waste-oil to be handled.

Production increases because machines are not shut down as often. Elcide 75 also contributes to better products and longer machine tool life by controlling the bacteria that may cause staining and corrosion. Employee efficiency improves, too, because Elcide 75 eliminates odor and controls bacteria that can cause skin infections.

Elcide 75 is more effective than other inhibitors because it is a combination of antibacterial agents, and includes a powerful new compound related to one of the safest, most effective bacterial inhibitors used in medical surgery. This combination controls a wider range of bacteria, including certain types that were resistant to commonly used germicides.

Elcide 75 controls harmful bacteria . . .

This photomicrograph shows one type of bacteria that enter emulsions through the air, water, and plant debris. They multiply rapidly and cause odor, staining, corrosion, and emulsion breakdown. Their damage costs the metalworking industry thousands of dollars each year.



Elcide 75 specifications: *Active Ingredients—Sodium Ethylmercuri Thiosalicylate (Thimerosal) and Sodium o-phenylphenate. Price per gallon—1-gallon polyethylene, $8.50, 5-gallon polyethylene, $8.00, 55-gallon stainless steel, $6.50. Sold only through selected distributors. For more information or to place your order, phone or write:*

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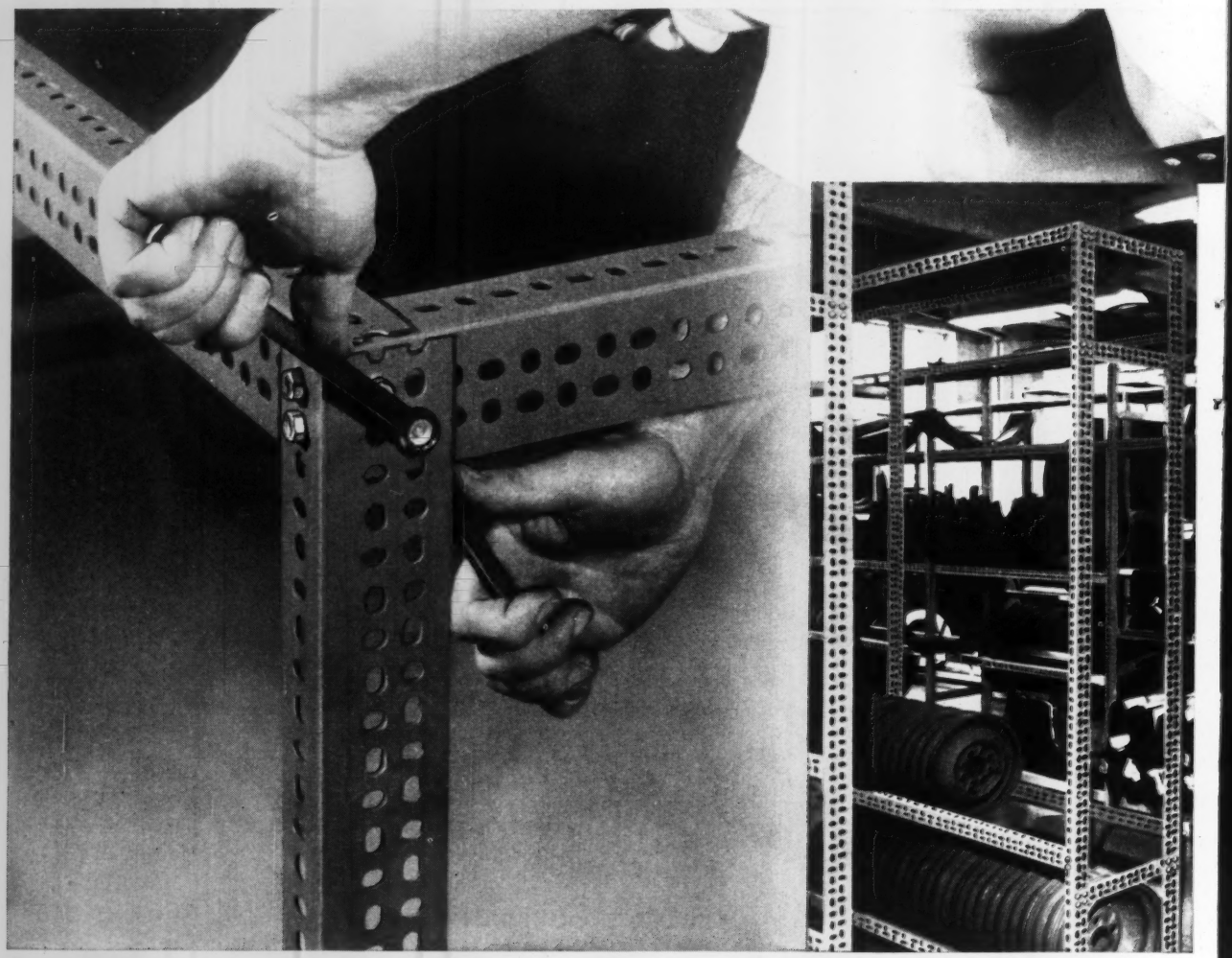
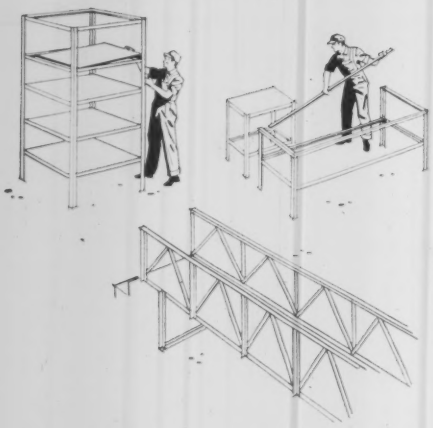
ELI LILLY AND COMPANY, AGRICULTURAL AND INDUSTRIAL PRODUCTS DIVISION, INDIANAPOLIS 6, INDIANA. TELEPHONE: MELROSE 6-2211



REPUBLIC METAL LUMBER

...new building material meets every framing need



Now . . . new building material made of steel with all the framing erection conveniences of common lumber. Republic's new slotted-angle METAL LUMBER is unlimited in application.

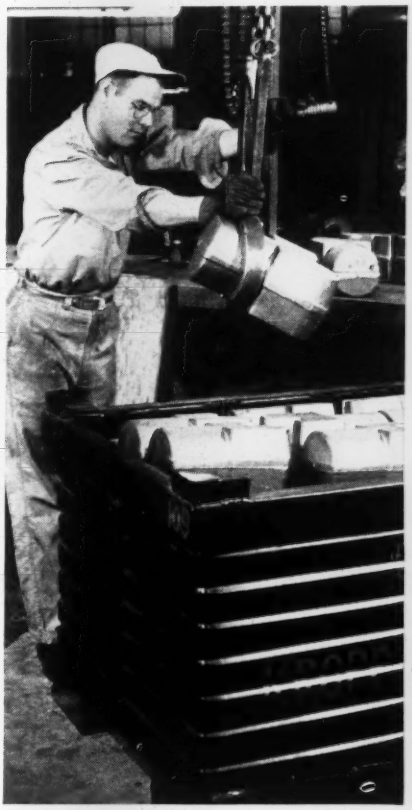
Secret is the precision-engineered system of short slots placed to allow ¾″ vertical and horizontal adjustment for utmost flexibility in meeting design requirements. Two-way short-slot pattern provides sufficient bolts in bearing to assure adequate joint strength. Easy to use—simply measure, cut, assemble.

Republic METAL LUMBER® is Bonderized, finished with baked enamel after fabrication for greater resistance to rust and damage. Delivered in easy-to-handle bundles of 10 angles, .080 gage or .104 gage, 10- or 12-foot lengths, hardware included. Stores in same space as one 2″ x 4″ piece of lumber.

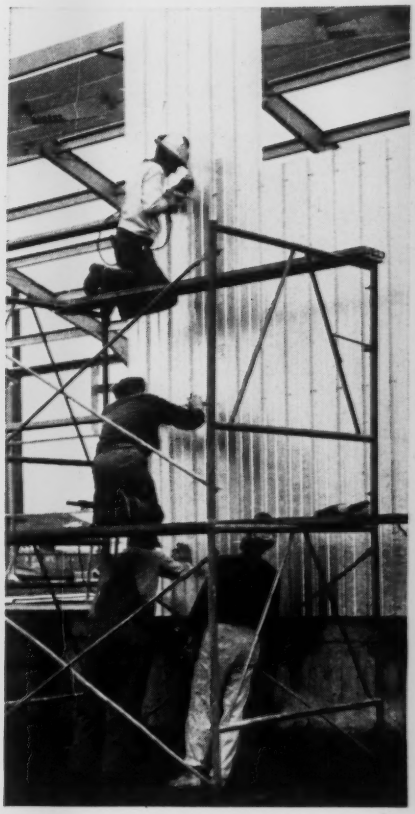
Save time, space, and money in building storage racks, catwalks, supports, guard rails, special purpose tables, facilities. Call your Republic representative or write for idea-packed catalog.

MORE REPUBLIC STORAGE AND MATERIALS HANDLING PRODUCTS THAT SAVE MANUFACTURERS AND FABRICATORS TIME AND MONEY...

REPUBLIC WEDGE-LOCK LONG PARTS STORAGE UNITS are easy to load, unload from either side. The heavier the load, the tighter the grip because Wedge-Lock construction includes the three prime essentials of good shelving: 1. A post that will not bend; 2. A reinforced shelf that does not sag; 3. A concealed sway-proof joint. Republic Storage Engineering specialists help you plan. Write today.



REPUBLIC MATERIALS HANDLING SPECIALISTS engineered these steel boxes to the requirements of the Kropp Forge Company, Chicago, Illinois. Special features include corrugated construction for strength, smooth channel around the top to eliminate sharp edges, four-way fork channels to simplify handling, and stacking brackets to permit tiering to any practical height. For materials handling ideas that save space, time, and money, call Republic or send coupon.



TRUSCON "BUDGET BUILDINGS"...3-WEEK DELIVERY from order to job-site! Here's top utility at lowest cost—the fast, easy way to provide industrial housing or to enlarge manufacturing facilities. Truscon "Budget Buildings" are available in widths of 32, 36, 40, 44, and 48 feet—12- and 14-foot heights, in any length necessary. Roofing, siding, windows, doors, hardware shipped as a package. Erection is fast, easy. Send for brochure.

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☐ Republic METAL LUMBER ☐ Wedge-Lock Shelving
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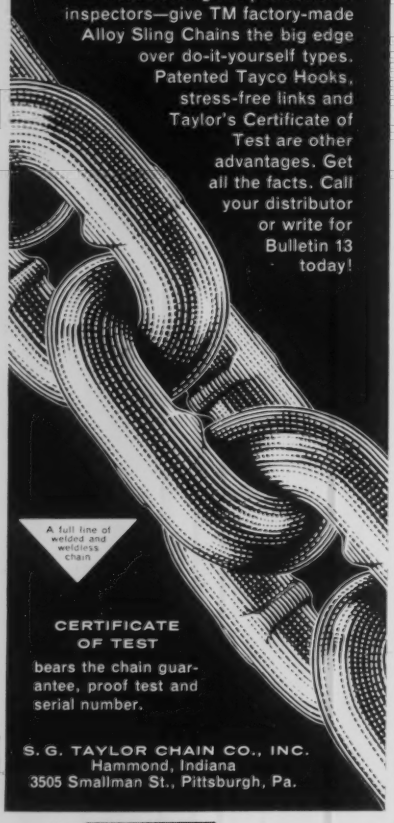

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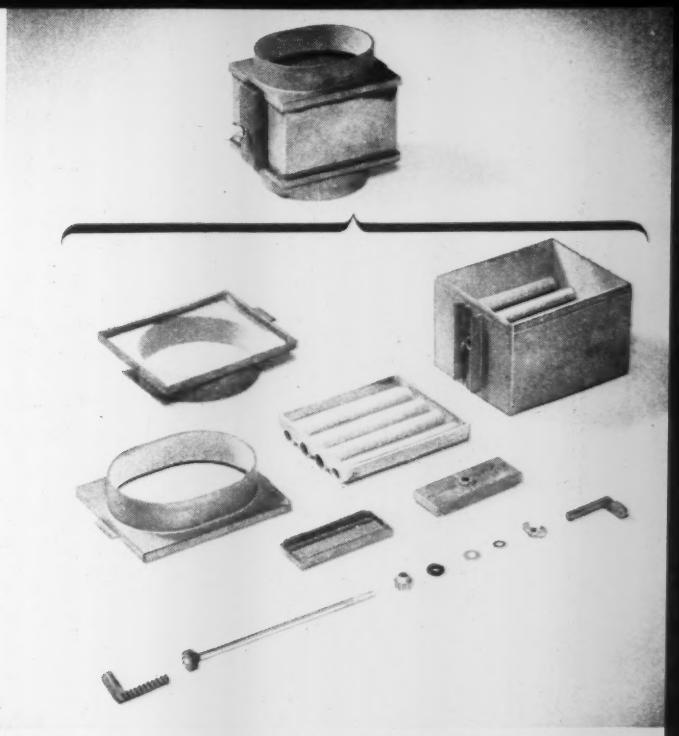


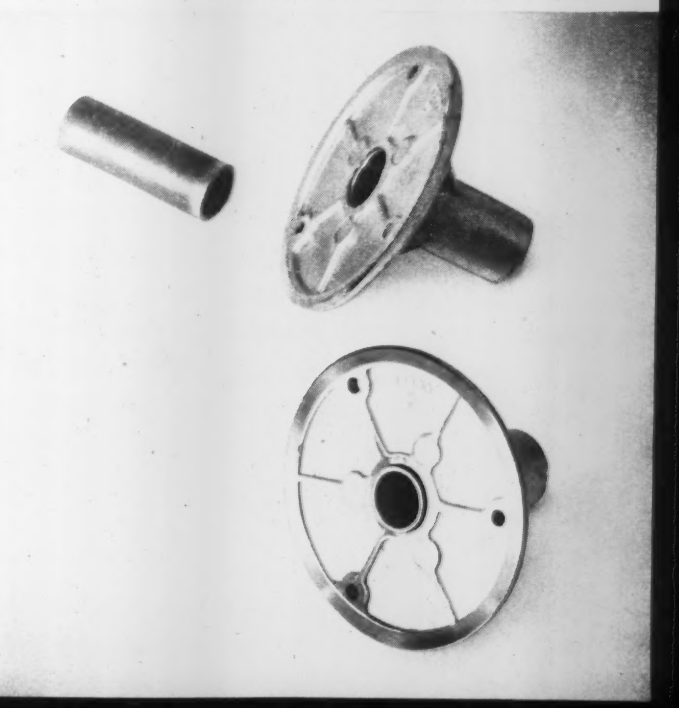
● **D-J casts, finish machines, plates and assembles door hardware** for a Mid-West merchandiser. Eleven zinc parts are die cast . . . then tapped, reamed, faced and plated. Other parts are drawn and stamped as needed. Springs, lock washers, screws, locks and keys are purchased. Finally, D-J assembles and packages the units.

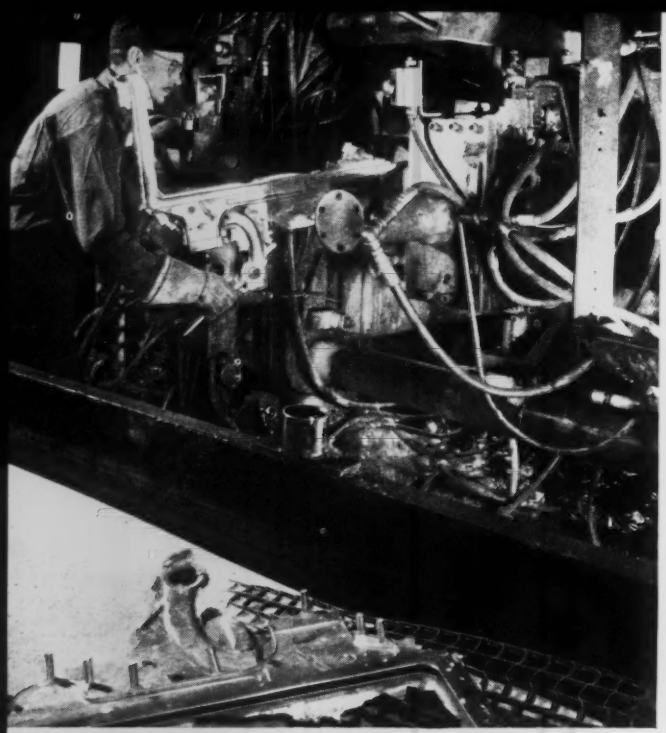
● **D-J die casts, machines, flock finishes and assembles damper** for York Corporation. Unit is a complex high precision assembly of ten die cast parts including racks, pinions, and pistons. D-J flocks interior parts before assembly, seals seams to air-tightness under pressure. Exterior surfaces are carefully alodined.

3 pages of proof Doehler-Jarvis can do more for you than die cast parts...

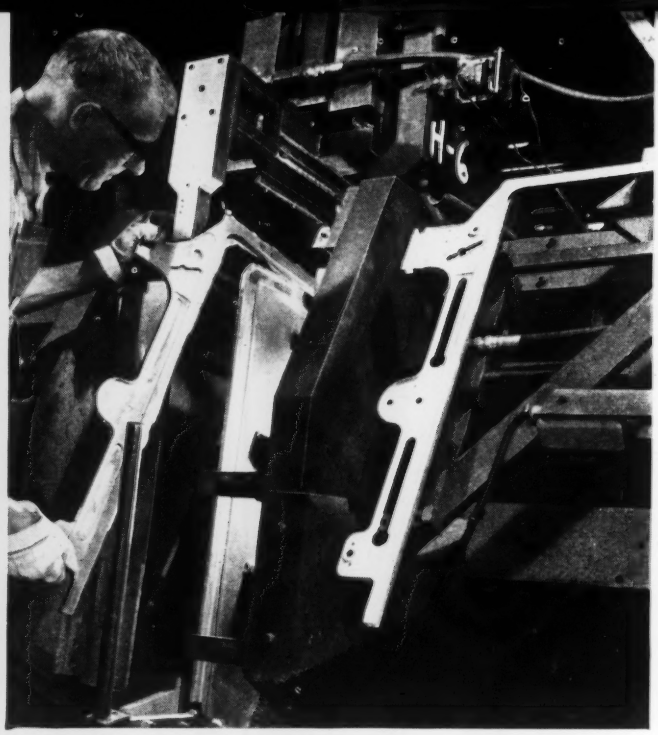
● **D-J casts, profile shapes, taps and electro-statically paints TV set parts** for Radio Corporation of America. Ready-for-assembly die castings are by far the lowest-cost way to produce lightweight metal bezels and glass retainers for RCA Victor TV sets. Their dimensional stability speeds assembly.

● **D-J casts, machines, and assembles turntable hubs** for well-known phonograph manufacturer. Hubs are trimmed, turned, slotted, reamed and fitted with bearings. The bearings are then chamfered and sized. Tolerances of 0.001 inch or less are maintained throughout all these operations.





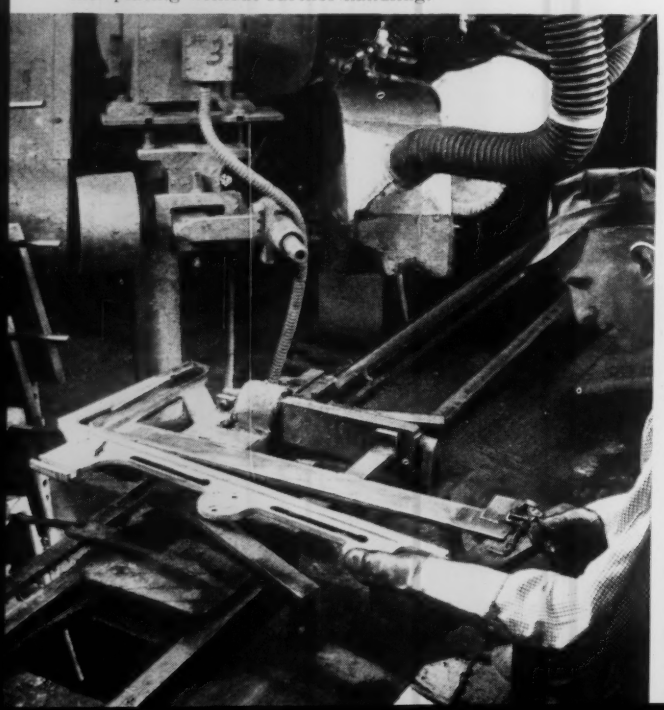
1 **Operator removes die cast zinc main channel** for Lincoln or Continental window assembly from large 48" casting machine. Part is quenched in cooling solution then conveyed to trimming. D-J is now researching production techniques on giant 72" machine, world's largest.



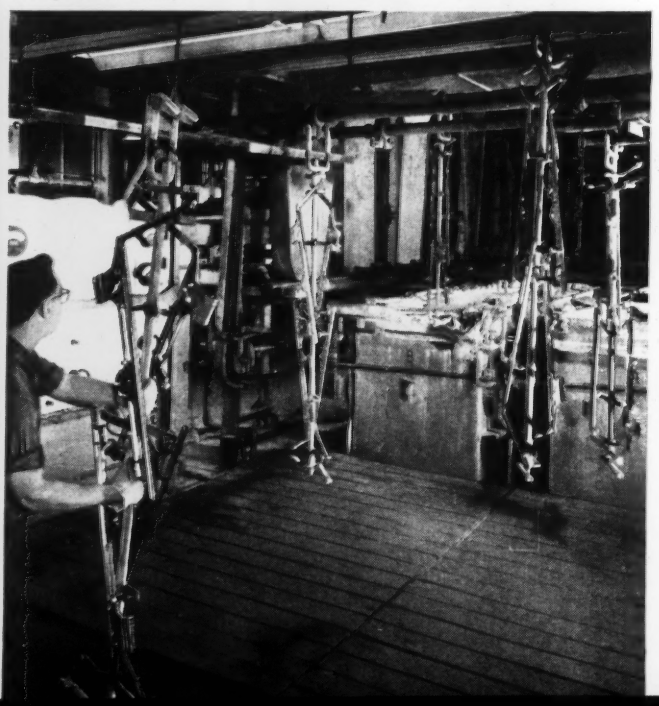
2 **Ingenious double-acting trimmer removes gate,** trims flash, finishes slots, taps 3 holes. Notice jig at right miters corner of frame. Scrap metal is collected, re-melted, re-refined and re-used. Minimum metal consumption is a big advantage of die casting.

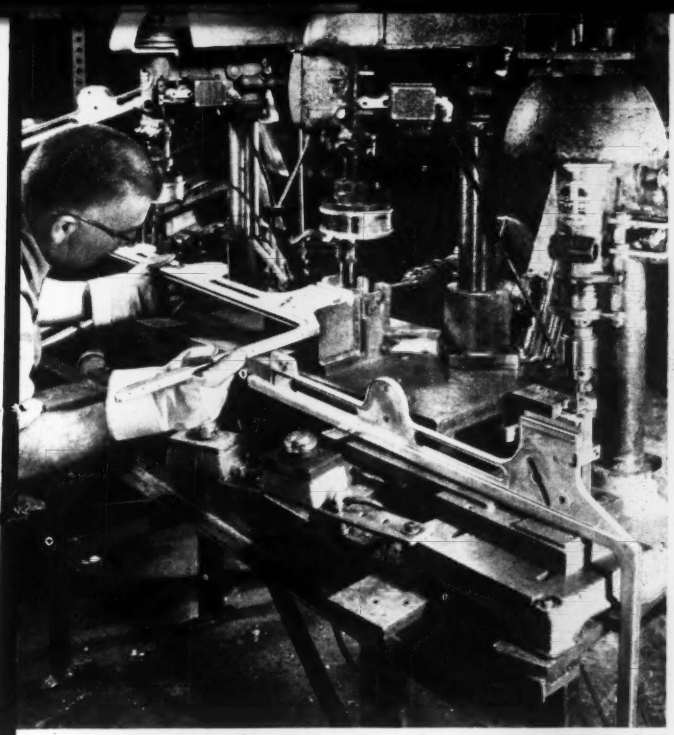
...D-J makes machines, plates, puts together

4 **Buffing, too, is set up for maximum economy.** Part is snap-clamped to device that positions it automatically for buffing wheels. When leaving fast-moving buffing lines, parts are racked and processed by conveyor through degreasing into plating without further handling.



5 **"Christmas trees" carry channels through plating.** Part is given optimum copper, nickel, chrome thicknesses using an automatic "plate-on-plate-off" current sequence that develops unusually high quality long-lasting finish desired for this premium car.





3 **Ganged machines complete drilling, tapping, reaming.** Behind operator you can see a universal work toting device. Removable pins support work and present it to operator prepositioned for speediest handling. (For another view of device, see following picture.)

a window assembly for the Lincoln Continental

6 **Window is glazed and finish assembled in special jig.** Here die cast channel, glass and other parts (some made, some purchased by D-J) are put together and weather sealed. Packaged part is shipped both to the Lincoln and Continental plants and to distributor warehouses.

Not everyone knows that Doehler-Jarvis does extensive machining, finishing and sub-assembly work as well as die casting.

But it's true. Every Doehler-Jarvis Plant (8 in the U. S. and Barber Die Casting in Canada) mass produces sub-assemblies, as well as die casting and finishing basic parts. And you can rest assured, costs undercut those that customers might achieve in their own plants.

Costs are bound to be low. Doehler-Jarvis has in abundance versatile machining, metal forming and joining equipment plus finishing facilities that are unique. Experienced design, purchasing and production personnel, too. Everything needed to set up economical, continuous production, assembly, and packaging lines.

There are other savings, too . . . savings in *your* plant. Less tooling, for example. And you receive a responsibly inspected, fully functional sub-assembly ready for immediate use. Many D-J customers take delivery only on sub-assemblies needed for basic production. Spare-part production goes directly to customer's distributors.

Makes sense, doesn't it? Especially when you see, as in these three pages of pictures, how D-J handles typical production work.

Maybe you could push your costs down this way, too. Care to talk it over?

Doehler-Jarvis

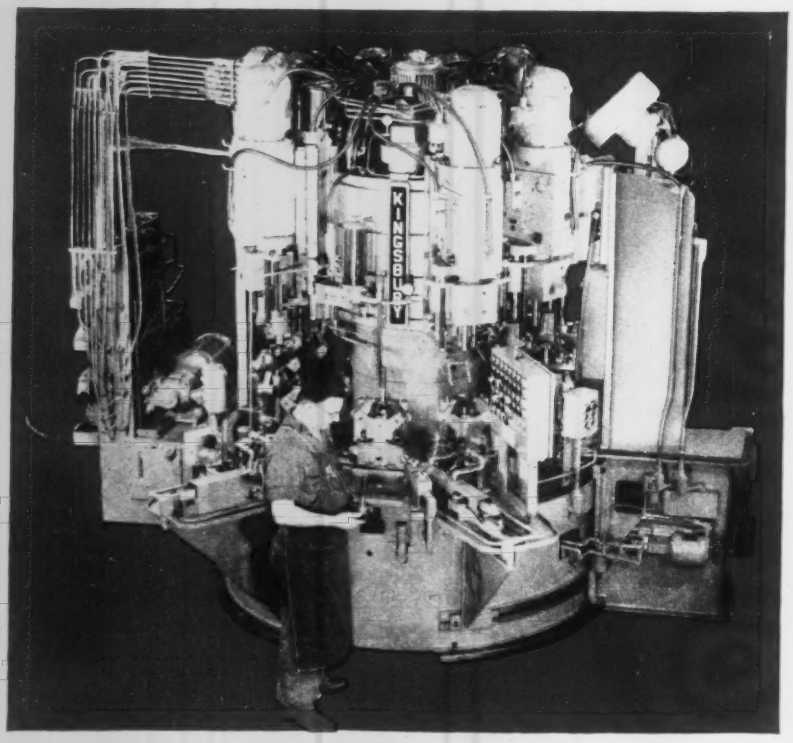
DIVISION OF NATIONAL LEAD COMPANY

General Offices: Toledo 1, Ohio

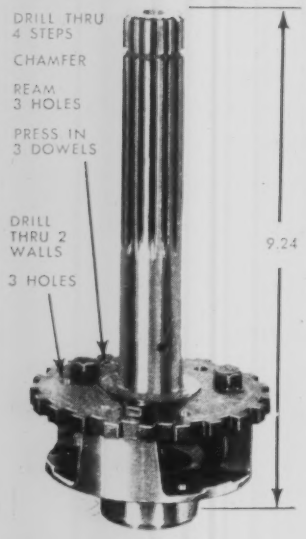
In Canada:

Barber Die Casting Co. Limited

Hamilton, Ontario



New 24-spindle Kingsbury has hydraulic slides, dowel presser



STEEL SHAFT ASSEMBLY FOR AUTOMATIC TRANSMISSION

At a gross rate of 210 parts an hour, eight vertical 3-spindle units on the center column operate on this shaft. To clear the stem of the work as it indexes, hydraulic slides raise these units 5.5 inches from their operating positions. The movement takes one second each way and has a smooth harmonic motion. Cams in the units feed the tools 2.7 to 3.5 inches more as required.

A dowel pressing unit is at the right. The operator loads dowels into the hopper at the top. Three dowels are fed down different tubes and are pressed into the work. At the previous station the work is washed clean of chips.

A 63-inch index table holds 12 work fixtures with power clamping and unclamping.

Real production without trouble. Production men praise our machines because they really produce and give little trouble. The main reasons are good basic design and rugged, accurate construction. If you have a job for a multi-unit automatic and can't afford to live with it day after day to make it work, consider a Kingsbury. It will pay off. Kingsbury Machine Tool Corp., Keene, New Hampshire.

KINGSBURY MULTI-UNIT AUTOMATICS

Kingsburys make money on simple jobs too

DRILL AND TAP 2 HOLES 90° APART

PUMP PULLEY FOR AUTOMATIC WASHER

This simple machine makes money for the Maytag Co. by producing at a gross rate of 590 parts per hour with almost no downtime or rejects.

A 15-inch index table holds four work fixtures with manual clamping and unclamping. Four horizontal units drill and tap two holes. Bushings guide the drills for accuracy.

Typical Kingsbury jobs in eleven industries

These parts are used in a ball bearing, automatic transmission, door set, engine, generator, air conditioner, electric shaver, valve, aircraft engine, control instrument and rifle. All cost less on Kingsburys.

20 Distributors

EAST	Hartford 7	O C Stevens Mchy Co
	Long Island City 1	Triplex Mach Tool Co
	Philadelphia 6	John S Wright Mchy
	Syracuse 1, Buffalo 23, Rochester 4, Schenectady	Syracuse Supply Co
MIDWEST	Cincinnati 2	E A Kinsey Co
	Chicago 51, Milwaukee 8	Four States Mchy Co
	Cleveland 3, Toledo 13	Golden & McCoy
	Dayton 2	C H Gosiger Mchy Co
	Detroit 19	Birmingham & Conner Mchy
	Grand Rapids 4	Joseph Monahan Co
	Indianapolis 20	C C Garrett Mchy
	Pittsburgh 37	Merit Mchy Co
	St. Louis 24, Kansas City, Mo., Wichita, Tulsa	Robert R Stephens Mchy Co
SOUTH	Atlanta 6	J R Waltraven
	Charlotte 5	Geo A Marshall Mchy
WEST	Houston 13	Wessendorf Nelms & Co
	Denver 16	Mine & Smelter Supply Co
	Los Angeles 22, Berkeley 10, San Diego 3, San Jose, Scottsdale, Ariz.	Moore Mchy
	Spokane 8	W R Matthews Mchy & Tool Co
CANADA	Toronto 8	Barker Industrial Equip Ltd

Youngstown rope wire

will help speed construction in his day

New schools for a burgeoning population—super highways of greater breadth and width—modern plants that serve whole nations—these are only three of the millions of new construction projects this boy will see completed with the assistance of wire rope fabricated from Youngstown wire. Continuing advancements in research and steelmaking facilities make certain that when the buildings of *his* day rise into the sky ... *Youngstown Rope Wire will help construct them.*

QUALITY · YOUNGSTOWN · SERVICE

THE
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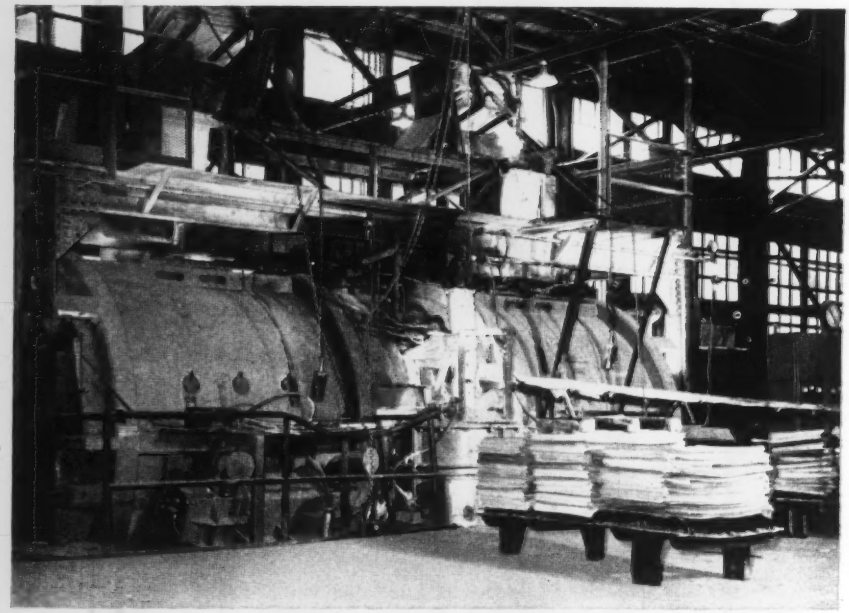
SHEET AND TUBE COMPANY

Youngstown, Ohio

Manufacturers of Carbon, Alloy and Yoloy Steel

Birthplace of an Automotive Part

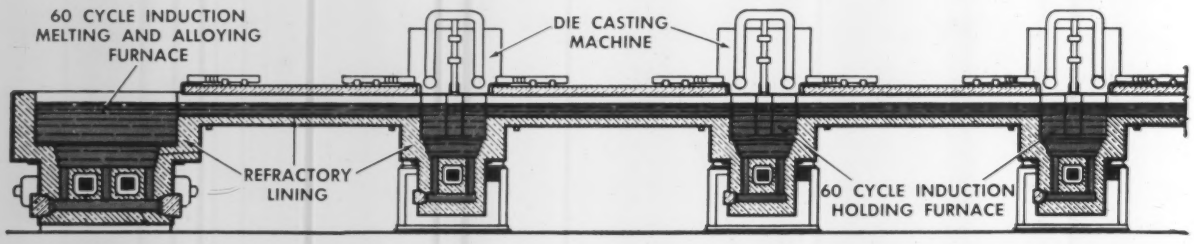


BUNKER HILL SPECIAL HIGH GRADE ZINC SLAB

PRODUCED IN THE AJAX FURNACE

High in the mountains of Idaho, the AJAX-TAMA-WYATT 800 kw induction furnace melts 235 tons of electrolytic zinc cathodes day after day. THE BUNKER HILL COMPANY, originators of Special High Grade Zinc, take pride in the purity (99.99+% Zn) of the slab poured from this 60 CYCLE INDUCTION MELTING unit. Such pure metal insures the soundness of the many zinc die castings used in our cars and appliances.

To maintain this purity when remelting the slab for die casting, hundreds of AJAX-TAMA-WYATT furnaces are used today in our busy industrial regions. The diagram below shows a modern zinc die casting line for automotive parts, using a central 60 CYCLE INDUCTION MELTING and alloying furnace, and holding furnaces at each machine. Connecting electric molten metal runways eliminate all metal transfer labor. Unexcelled metal quality, low metal losses, reliability and economy of operation are assured by using 60 CYCLE INDUCTION MELTING throughout.


60 CYCLE INDUCTION MELTING AND ALLOYING FURNACE
DIE CASTING MACHINE
REFRACTORY LINING
60 CYCLE INDUCTION HOLDING FURNACE

AJAX USA

ENGINEERING CORPORATION

TRENTON 7, NEW JERSEY

60 CYCLE INDUCTION MELTING

Associated Companies: Ajax Electrothermic Corporation Ajax Electric Company

CALENDAR
OF MEETINGS

Nov. 10-12, Steel Founders' Society of America: Technical and operating conference, Carter Hotel, Cleveland. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Executive vice president: F. Kermit Donaldson.

Nov. 10-13, National Electrical Manufacturers Association: Annual meeting, Traymore Hotel, Atlantic City, N. J. Association's address: 155 E. 44th St., New York 17, N. Y. Managing director: Joseph F. Miller.

Nov. 11-13, Investment Casting Institute: Annual meeting, Hotel Roosevelt, New York. Institute's address: 27 E. Monroe St., Chicago 3, Ill. Executive director: Harry P. Dolan.

Nov. 12, Machinery Dealers National Association: Fall meeting, Sheraton-Cadillac Hotel, Detroit. Association's address: 1346 Connecticut Ave. N. W., Washington 6, D. C. Executive director: R. K. Vinson.

Nov. 12-14, Society for Experimental Stress Analysis: Annual meeting, Hotel Sheraton-Ten Eyck, Albany, N. Y. Society's address: P. O. Box 168, Cambridge 39, Mass. Secretary-treasurer: W. M. Murray.

Nov. 13, National Industrial Conference Board Inc.: General session for all associates, Cleveland Hotel, Cleveland. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

Nov. 16-21, American Trucking Associations Inc.: Annual meeting, Fontainebleau and Eden Roc Hotels, Miami Beach, Fla. Association's address: 1424 16th St. N.W., Washington 6, D. C. General manager: Ray G. Atherton.

Nov. 17-21, American Rocket Society: Annual meeting, Statler-Hilton Hotel, New York. Society's address: 500 Fifth Ave., New York 36, N. Y. Executive secretary: James J. Harford.

Nov. 17-21, Society of the Plastics Industry Inc.: National plastics exposition and conference, International Amphitheatre and Morrison Hotel, Chicago. Society's address: 250 Park Ave., New York 17, N. Y. Executive vice president: William T. Cruse.

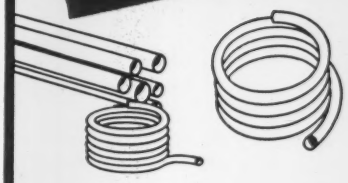
Nov. 18-20, American Standards Association: Conference on standards and annual meeting, Roosevelt Hotel, New York. Association's address: 70 E. 45th St., New York 17, N. Y. Managing director: E. F. Hussey.

Nov. 20-21, National Foundry Association: Annual meeting, Drake Hotel, Chicago. Association's address: 53 W. Jackson Blvd., Chicago 4, Ill. Executive secretary: Charles T. Sheehan.

Nov. 30-Dec. 5, American Society of Mechanical Engineers: Annual meeting, Statler-Hilton and Sheraton-McAlpin Hotels, New York. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

Series 2

PLUS ITEMS
from your
Whitehead Metals
"Supermarkets"



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A full line of flexible and rigid plastic pipe and tubing in all commercial resins, in sizes from ⅛" to 4" OD. Fittings, cements and valves available from stock. Write for detailed literature.

NON-SKID ALUMINUM TREAD PLATE

Providing amazing gripping power (either oily or dry) this lightweight, corrosion resistant Alcoa product has a tough abrasive (fused aluminum oxide) rolled right into an aluminum base plate for longer wear. Available in four thicknesses —0.125", 0.188", 0.250" and 0.375" Write for descriptive booklet.

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Top quality shafting made of Monel, Tobin Bronze or Tempaloy. Originally developed for boats and other marine use, these shafts have gained wide industrial use in pumps and other machinery operating in corrosive atmospheres. Literature available.

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Stainless Steel forged welding fittings are stocked in I.P.S. sizes from ½" to 12" for Schedule 5S, 10S, 40S and 80S Pipe. All conventional shapes are on hand. Welding fittings are also stocked in Aluminum, Monel, Nickel and Inconel. Literature available.

DISSIMILAR METALS WELDING WIRE

A new item introduced at the 1958 Welding Show, Inco-Weld "A" Wire is a single product for inert gas welding of most combinations of dissimilar alloys. Technical Service and complete literature on request.

These "Plus Items" and many more are available in addition to a wide selection of corrosion-resistant sheet, rod and tube.

All told, there are more than 20,000 items distributed and serviced by Whitehead. All are available, off-the-shelf, from the nine Whitehead Metal "Supermarkets." All are the products of such leading producers as Alcoa, Anaconda, Inco & Crucible Steel to name just a few.

When you call Whitehead you get fast service, and frank, unbiased help in selection. Technical service when you need it. Add it up and you'll find it pays to

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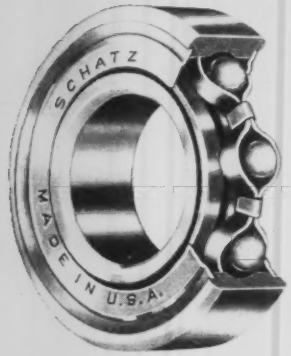
Name your load and speed combinations...

Schatz makes the most varied line of Ball Bearings to fit your needs



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One piece race type with ball cage. Designed to give all the precision you require under certain ratios of load, speed and life expectancy. Available in open type, single or double shielded, single or double sealed with Schatz patented low friction plastic seal. Or with one shield and one seal on special order.

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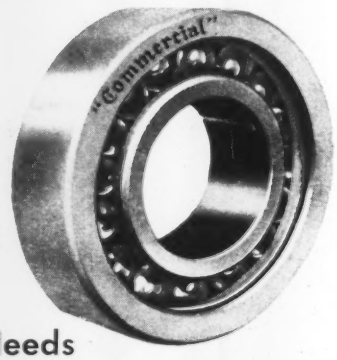
"Commercial" Ball Bearings

The most complete and varied line anywhere.



UNGROUND BALL BEARINGS "TYPE A"—Every standard type—radial, thrust and radial thrust.

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1033 sizes to match your Bearing Application Needs

FILL IN AND MAIL

We'll fit these bearings—or special types and sizes to your special needs. Just fill in your application problem below—attach to your letterhead and mail.

THE SCHATZ MANUFACTURING COMPANY, Poughkeepsie, N. Y.

Here's our bearing problem. What do you suggest?

APPLICATION_____

LOAD (radial, thrust or both)_____

SIZE_____

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SPECIAL CONDITIONS_____

Name_____ Title_____

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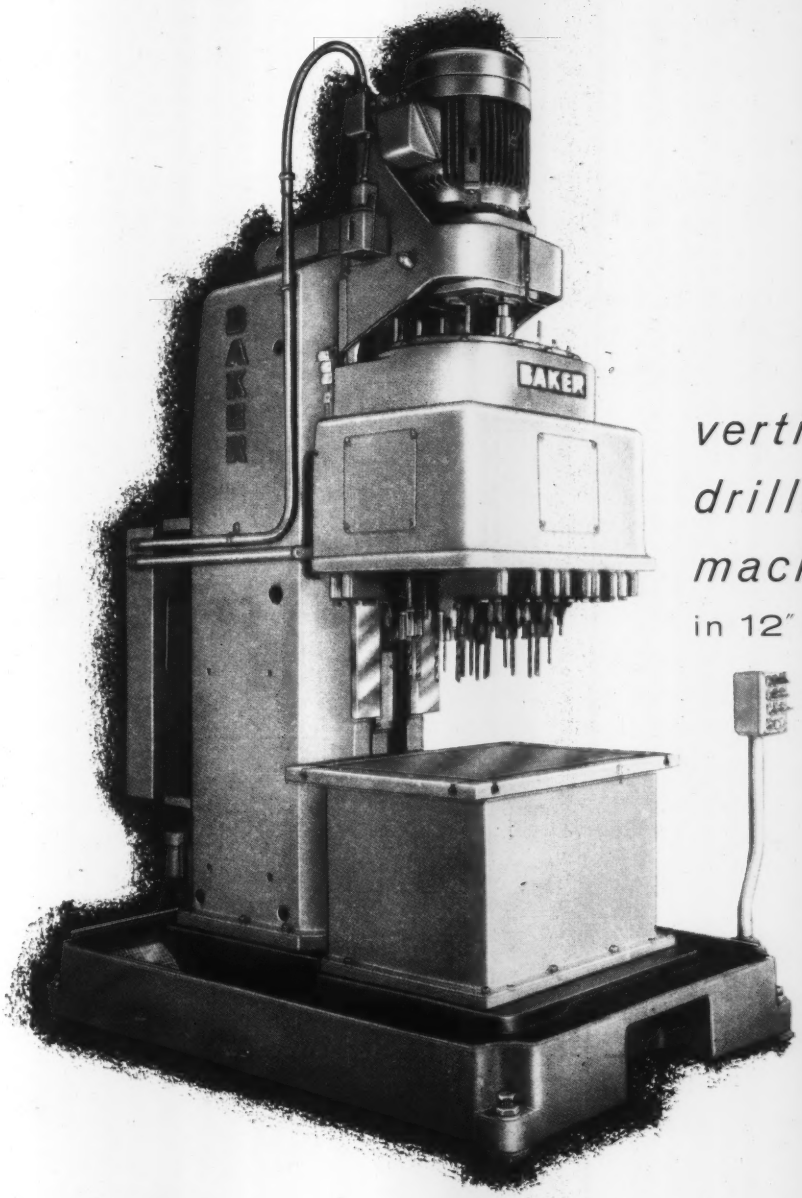
SCHATZ
BALL BEARINGS

new!

BAKER™



vertical hydraulic drilling and tapping machines

in 12″ - 18″ - 24″ way widths

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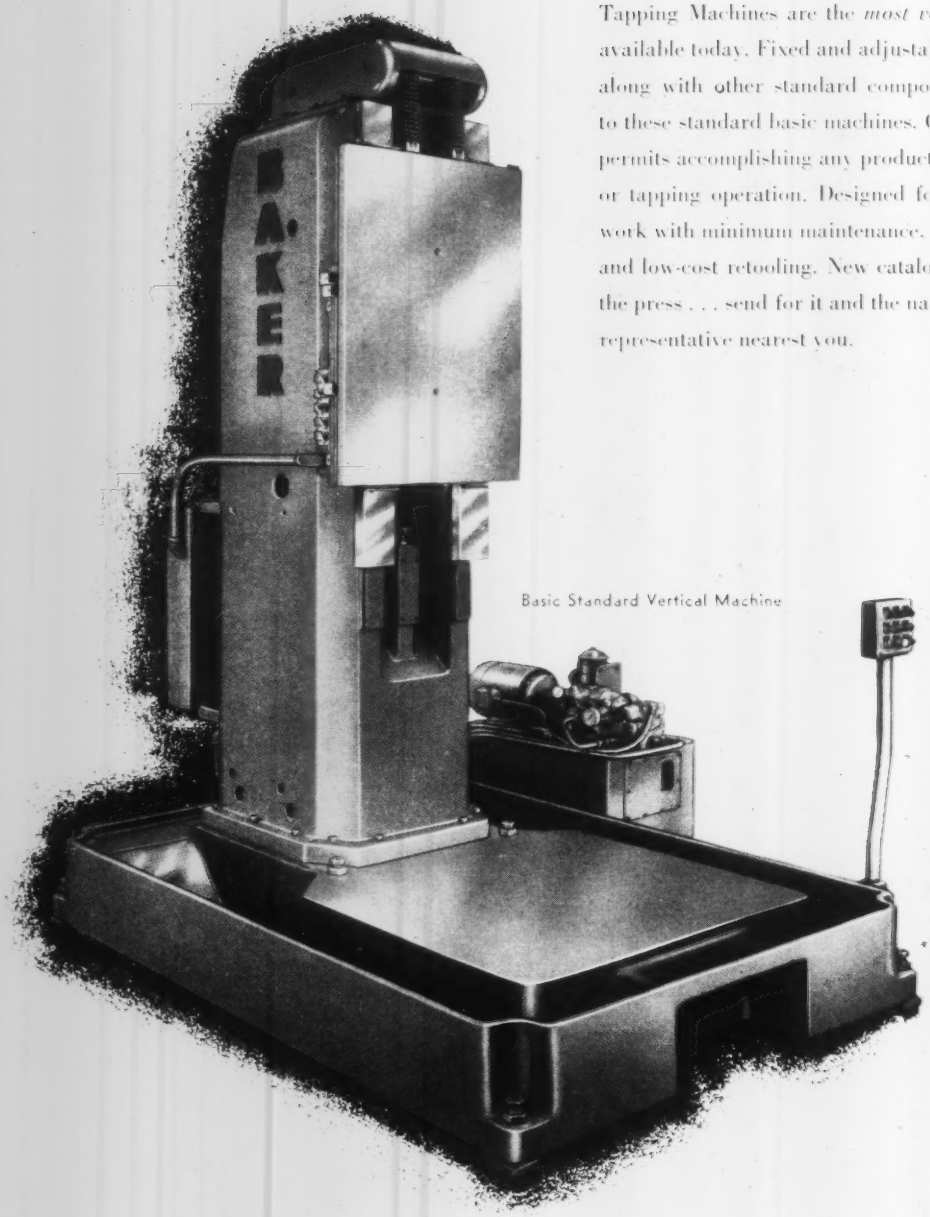
NEW Baker Vertical and Horizontal Drilling and Tapping Machines are the *most versatile* machines available today. Fixed and adjustable heads, along with other standard components, can be added to these standard basic machines. Complete flexibility permits accomplishing any production drilling or tapping operation. Designed for years of precision work with minimum maintenance, reduced stocking and low-cost retooling. New catalog just off the press . . . send for it and the name of BAKER representative nearest you.



Basic Standard Vertical Machine

NOW . . . COMPLETELY INTERCHANGEABLE!

To Fit 3 Sizes **Vertical** Machines

- 21 Adjustable Spindle Heads
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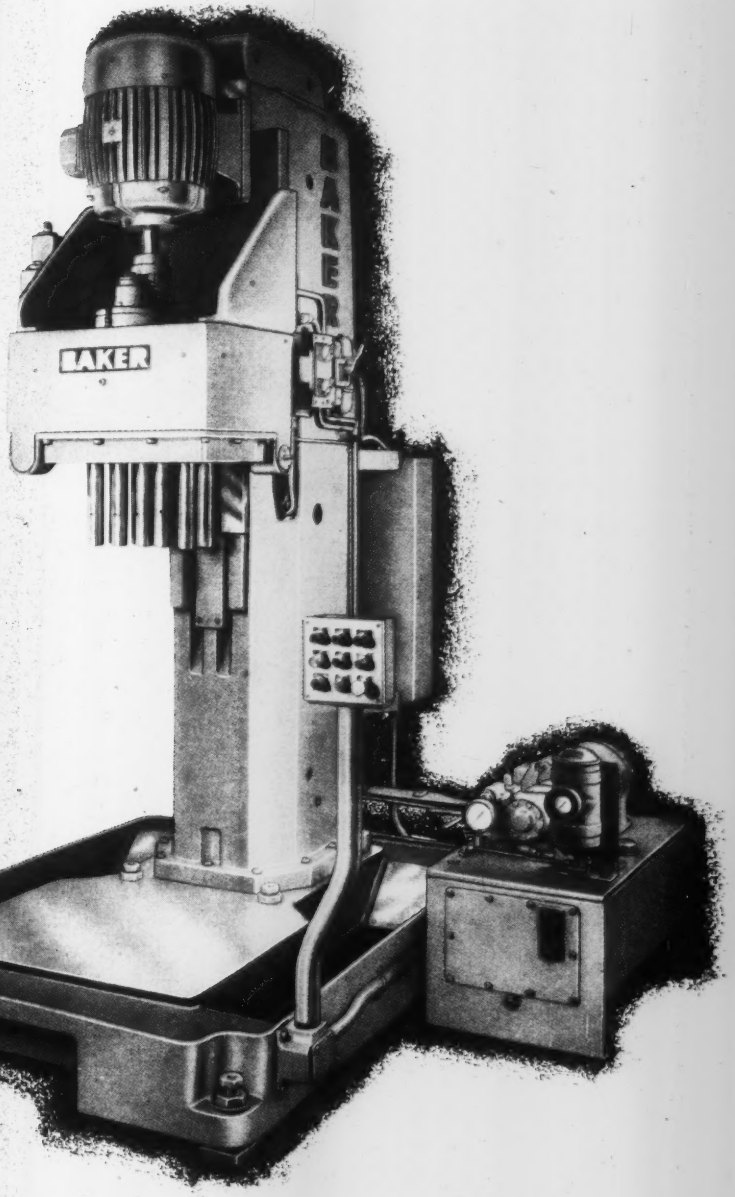

Basic Standard Vertical Machine
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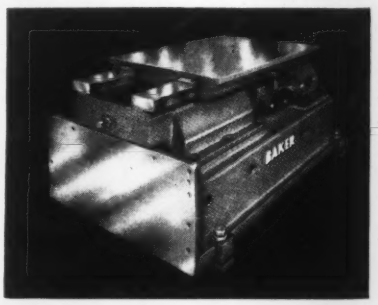
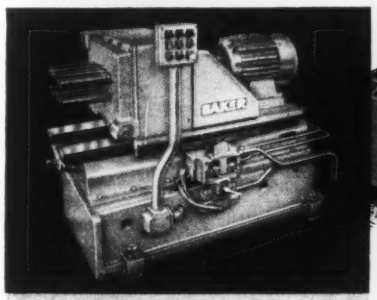


Basic Horizontal Hydraulic Unit



Basic Horizontal Feed Machine
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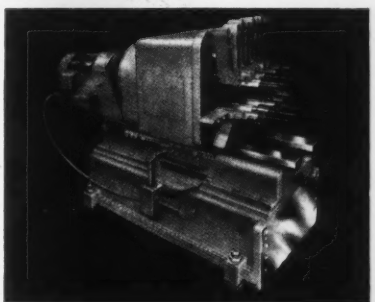
NEW HORIZONTAL HYDRAULIC FEED UNITS, TOO!



Basic Horizontal Feed Machine
With Standard Adjustable Head

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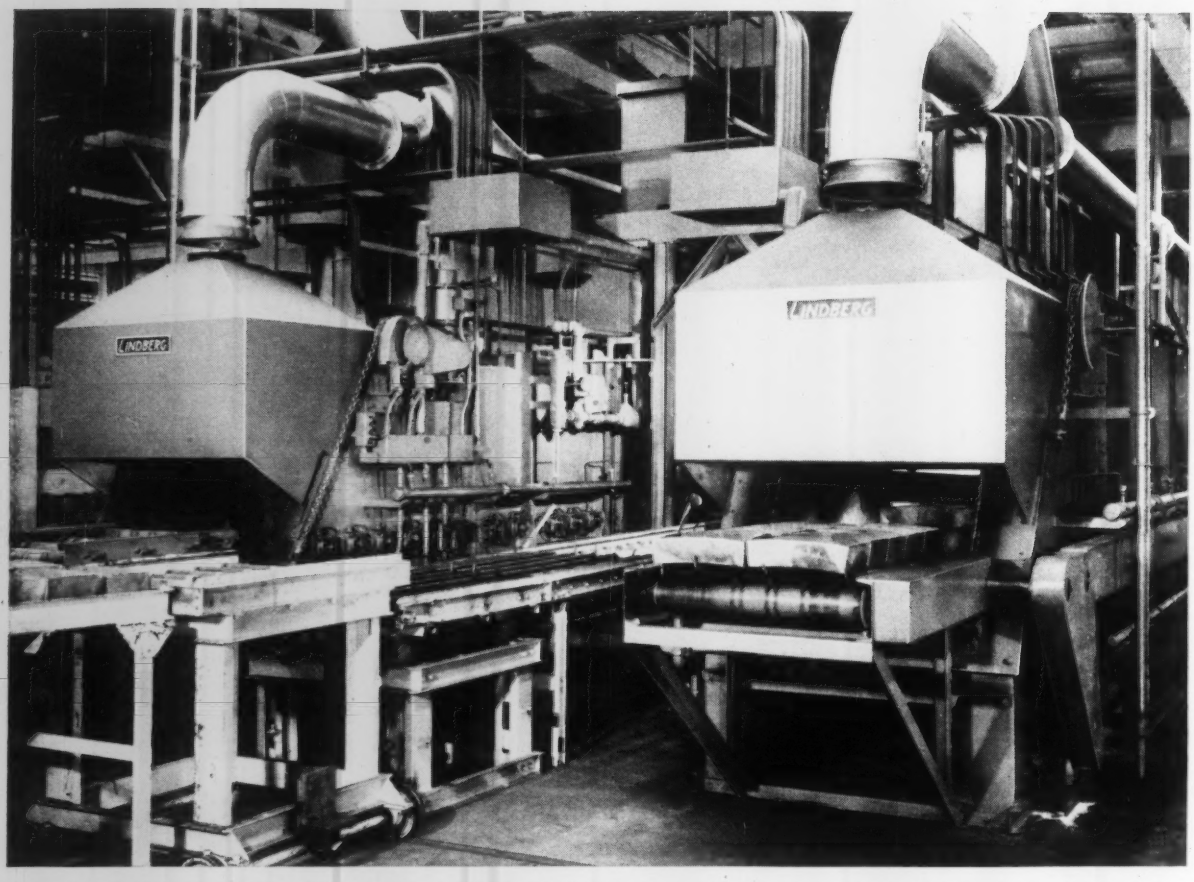
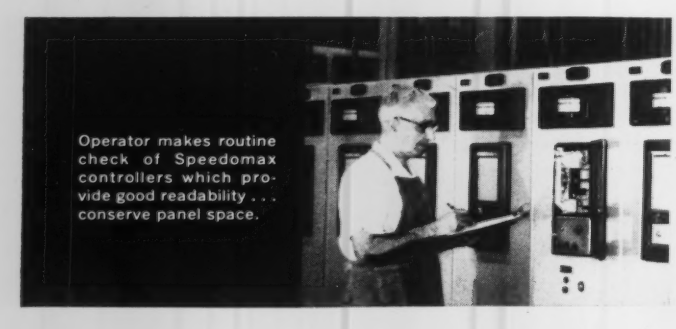


Automatic Electric Company: Speedomax H controllers closely regulate temperature of annealing furnaces which are completely automatic except for loading and unloading.

Control of heating and cooling temperatures a problem?

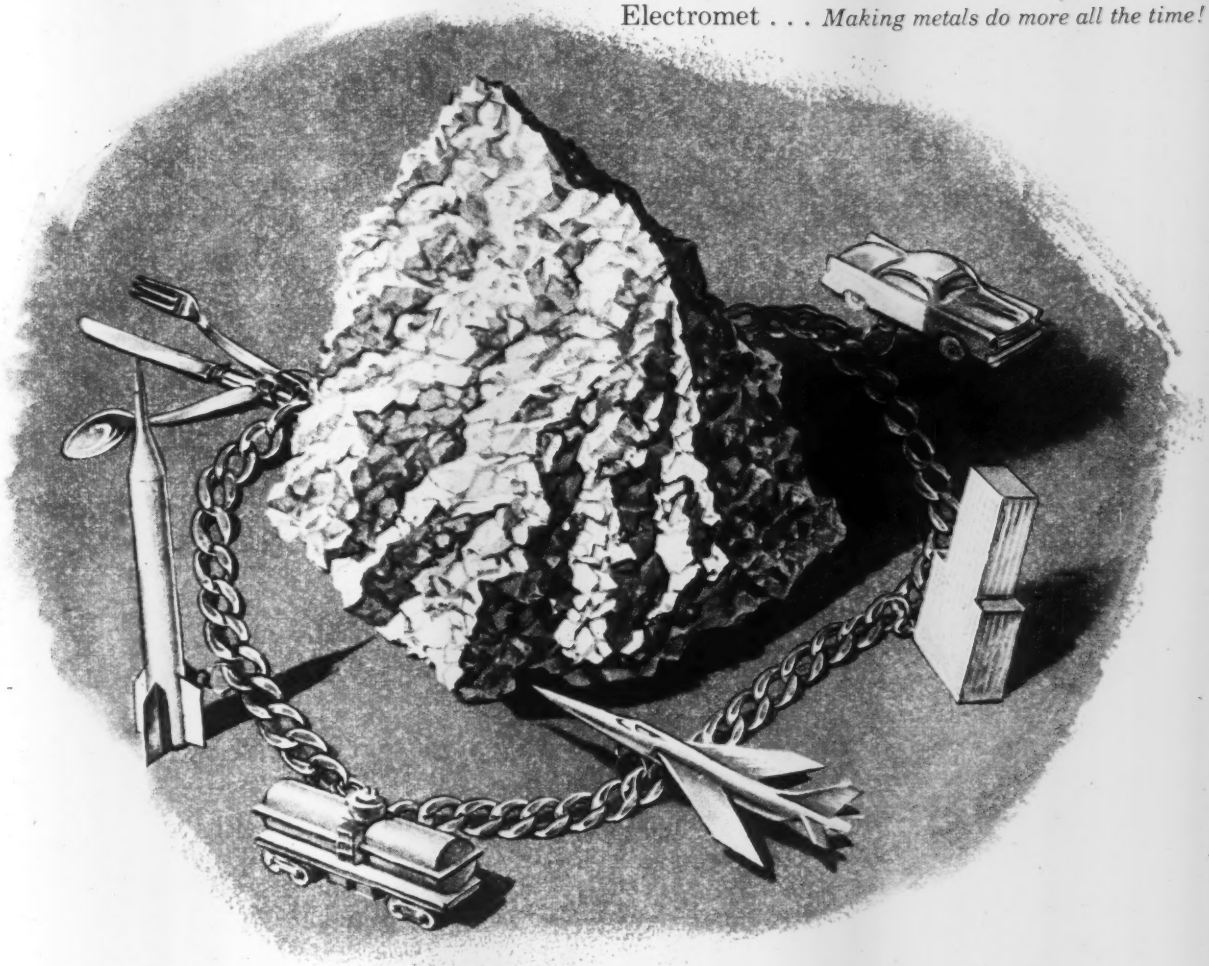
Not at Automatic Electric Company, where Speedomax® H controllers are helping to anneal magnetic properties into cores, armatures and heel pieces of quality relays and switches. These devices find wide use in telephone, industrial and military equipment . . . demand and get the best in production control. To obtain optimum magnetic properties, these components are put through a continuous 5-zone Lindberg furnace with heating and cooling temperatures closely controlled by Speedomax H. Rugged, compact and completely reliable, Speedomax H is providing the same dependable control on numerous heat treat processes . . . is helping produce both process economies and a quality product. *Whatver your heat treating process, it'll pay you to investigate Speedomax H!* For details, contact your nearest L&N office or write 4957 Stenton Avenue, Philadelphia 44, Pa.



Operator makes routine check of Speedomax controllers which provide good readability . . . conserve panel space.

LEEDS Instruments **NORTHRUP** Automatic Controls • Furnaces

Electromet . . . *Making metals do more all the time!*



What a difference chromium makes!

As the key metal in many of today's steels and alloys, chromium has greatly widened man's engineering horizons. "Super" alloys containing chromium are establishing new thermal limits . . . help jet, missile, and rocket parts withstand temperatures of 2000° F. and higher.

Steels become "stainless" . . . special alloys are exceptionally corrosion resistant . . . engineering steels gain extra wear resistance and strength . . . copper and aluminum are improved—with chromium.

ELECTROMET, the leading producer of chromium, is constantly searching for better ways to produce and use this metal. Chromium metal of the highest purity and ferrochrome with the lowest carbon content commercially available are typical results of ELECTROMET research. Such pioneering achievements lead the way to better steels and more versatile, more useful alloys.

Forty-four grades of chromium are among more than 100 high-quality alloys and metals that ELECTROMET produces. Want to know how chromium and its alloys can help meet your needs? Ask ELECTROMET.

ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York.

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FERRO-ALLOYS AND METALS

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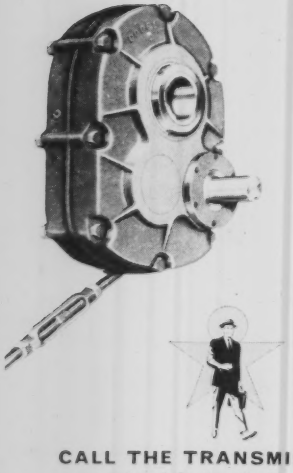
THERE'S QUALITY IN TORQUE-ARM

...AMERICA'S MOST WIDELY USED SHAFT-MOUNTED SPEED REDUCER



Extreme ruggedness and top quality are built into every detail of the Dodge Torque-Arm Speed Reducer—from the specially heat treated helical steel gears to the corrosion resistant semisteel housing. Broad demand has made it necessary to add sizes until today Torque-Arm is America's most complete (and most widely used) line of shaft-mounted speed reducers. Capacities range from 1 to 100 hp; output speeds from 12 to 378 rpm.

Torque-Arm is mounted on the driven shaft, in any vertical or horizontal position. It is anchored by the torque-arm fastened to any fixed object. No need for foundation, flexible coupling, sliding base. No lining up difficulties. The unit is driven through any V-belt drive. Savings up to 1/3 are possible and Torque-Arm's efficiency is high. It delivers 97% efficiency in double reduction models; and almost 99% in single!

Ask your local Dodge Distributor—or write us for bulletin.

DODGE MANUFACTURING CORPORATION
4400 Union Street, Mishawaka, Indiana

CALL THE TRANSMISSIONEER
—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the white pages of your telephone directory for "Dodge Transmissioneer."

DODGE
of Mishawaka, Ind.

At Grinnell, molten iron is poured from air furnaces 16 hours a day (above) to produce over 2,000 different types and sizes of castings like those shown at right.

Grinnell uses HANNA SILVERY at their Columbia, Pa., plant to help maintain close silicon control

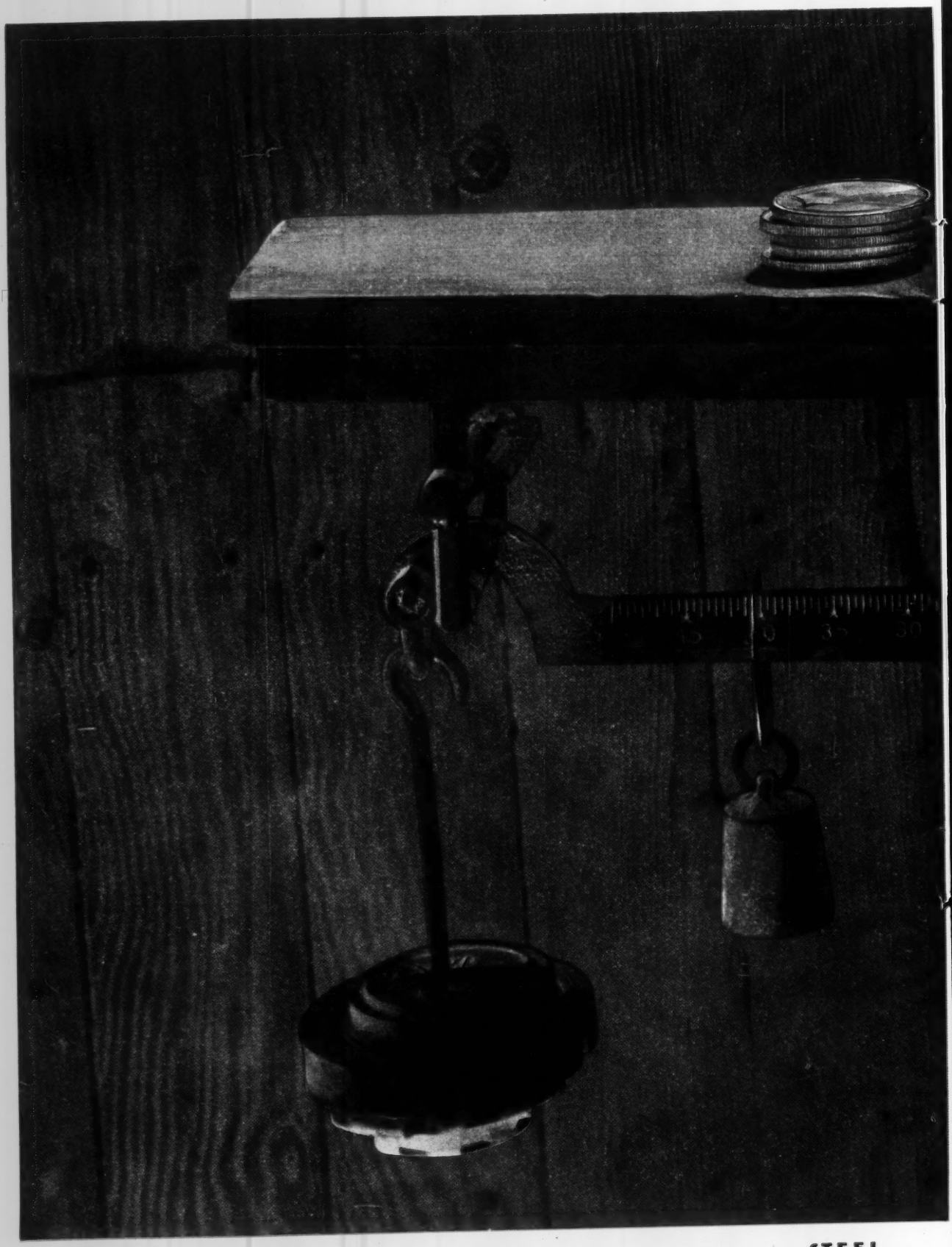
Grinnell Corporation is nationally known for its automatic sprinkler systems—a line relied on for dependable fire protection by thousands of American businesses. For these systems, and for its piping supply sales throughout the country, Grinnell at its Columbia, Pa., plant annually produces over 100 million malleable iron castings of uniform quality and dependability—pipe fittings, pipe hangers and supports from $\frac{1}{8}$" I.D. elbows to 6" I.D. tees.

Every one of more than 2,000 patterns, many of them intricate, is cast from the same mixture. An all-important part of this mixture is Hanna Silvery Pig Iron. Grinnell metallurgists have found that Hanna Silvery, with its dependable analysis, gives them the silicon control so essential to the uniform qualities required in sprinkler systems and pipe fittings.

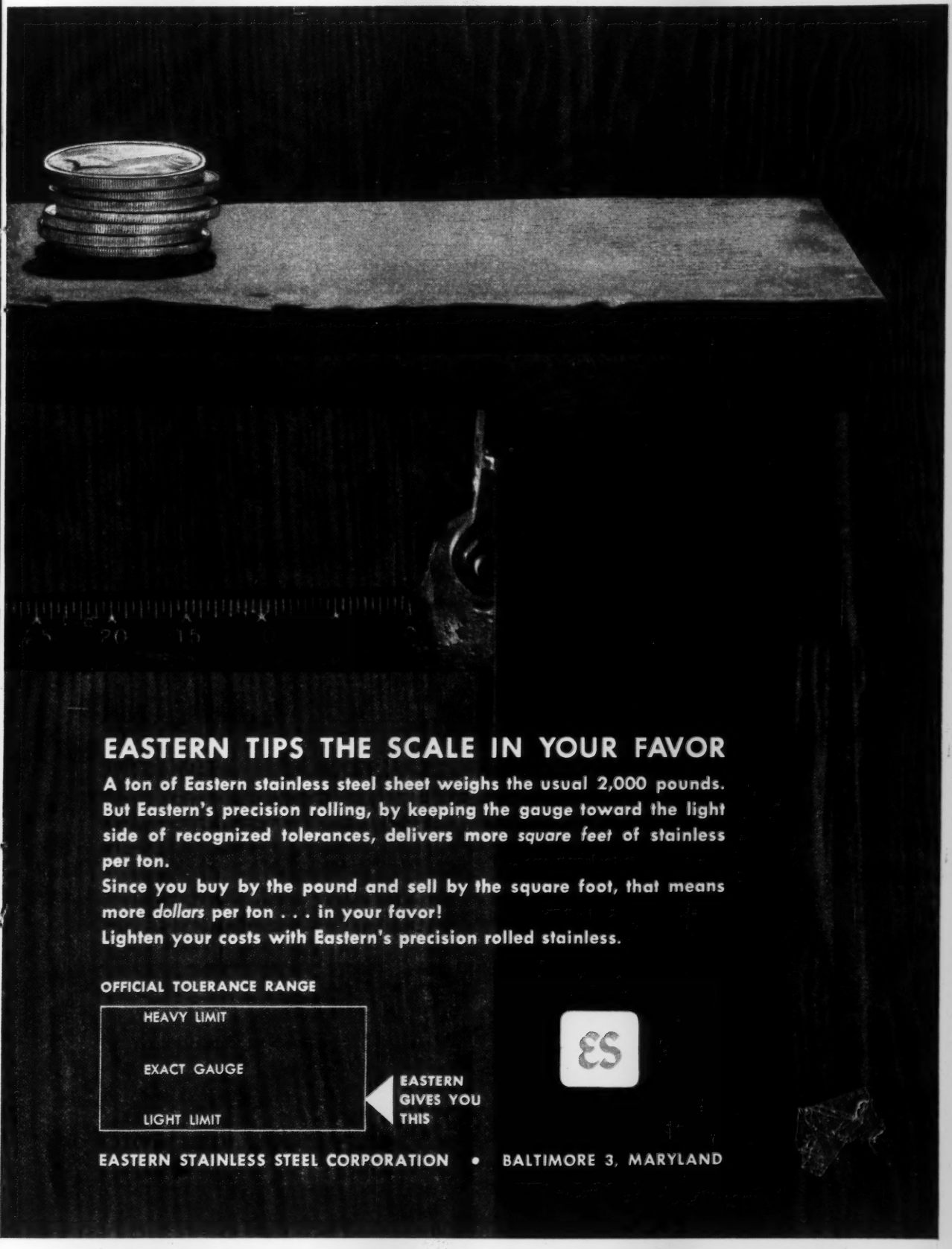
In addition to Silvery, Hanna produces all regular grades of pig iron, including HannaTite, a specially controlled close-grain iron. All are available in the popular 38-pound pig and the smaller HannaTen ingot.

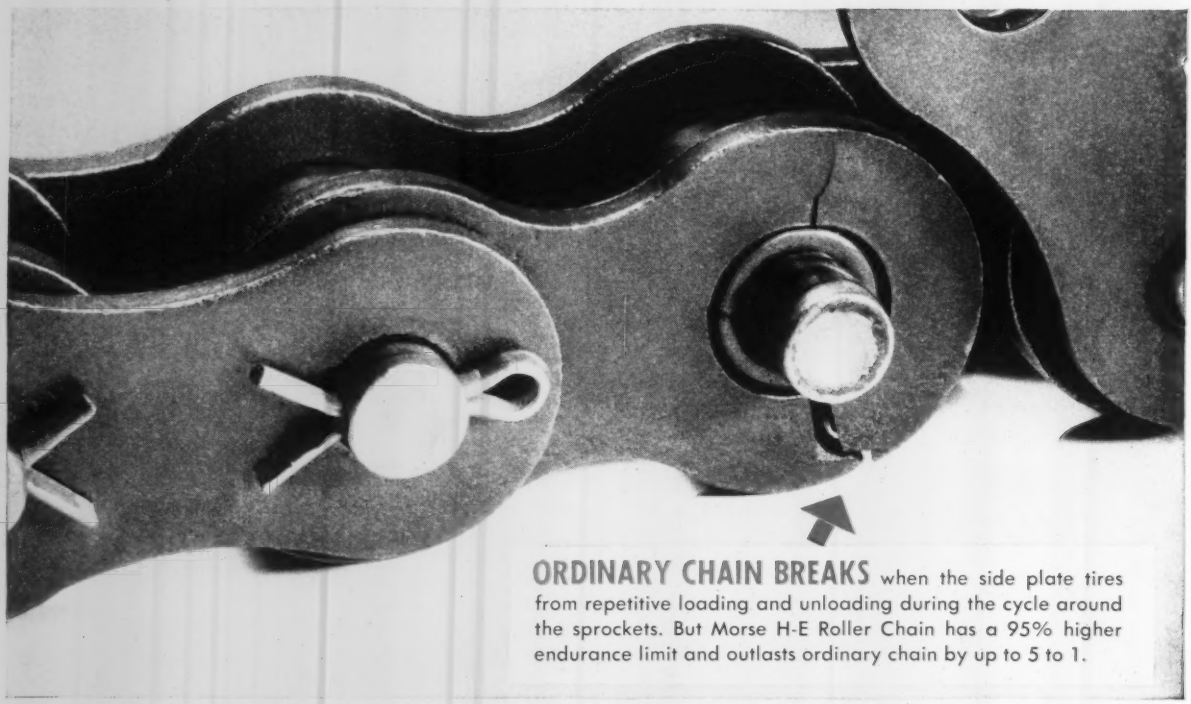
Ask your Hanna representative how he can help solve your pig iron problems. He is an expert and as close as your telephone.

THE HANNA FURNACE CORPORATION
Buffalo • Detroit • New York • Philadelphia
Merchant Pig Iron Division of
NATIONAL STEEL CORPORATION



STEEL


EASTERN TIPS THE SCALE IN YOUR FAVOR
A ton of Eastern stainless steel sheet weighs the usual 2,000 pounds. But Eastern's precision rolling, by keeping the gauge toward the light side of recognized tolerances, delivers more *square feet* of stainless per ton.
Since you buy by the pound and sell by the square foot, that means more *dollars* per ton . . . in your favor!
Lighten your costs with Eastern's precision rolled stainless.
OFFICIAL TOLERANCE RANGE
HEAVY LIMIT
EXACT GAUGE
LIGHT LIMIT
EASTERN GIVES YOU THIS
ES
EASTERN STAINLESS STEEL CORPORATION • BALTIMORE 3, MARYLAND



ORDINARY CHAIN BREAKS when the side plate tires from repetitive loading and unloading during the cycle around the sprockets. But Morse H-E Roller Chain has a 95% higher endurance limit and outlasts ordinary chain by up to 5 to 1.

"Tired Metal"... the bane of chain now licked by MORSE H-E

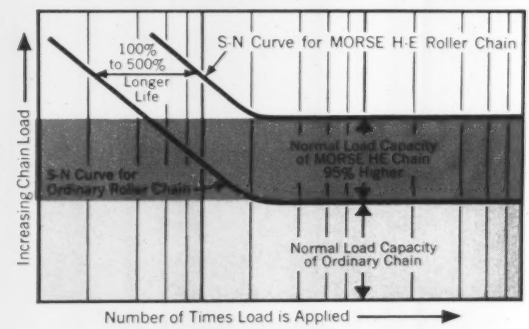
Morse H-E Roller Chain has up to 500% longer service life . . . cuts replacement and labor costs

The unretouched photograph shows what happens to chain when the metal fatigues. But now a special Morse process has licked the "tired metal" problem. It gives Morse H-E Roller Chain 95% higher endurance limit . . . and up to 500% longer service life.

The special process means Morse H-E Chain costs about 10% more. But that's a small price to pay for a heavy-duty chain that can save you thousands of dollars annually in replacement costs, downtime, and wasted man-hours.

For more information on the chain that licked the "tired metal" problem once and for all, see your local Morse Distributor. Or write: MORSE CHAIN COMPANY, Dept. 2-118, Ithaca, New York. Export Sales: Borg-Warner International, Chicago 3, Illinois.

Chain Life: Morse High Endurance vs. Ordinary Roller Chain


100% to 500% Longer Life
S-N Curve for MORSE H-E Roller Chain
Normal Load Capacity of MORSE HE Chain 95% Higher
S-N Curve for Ordinary Roller Chain
Normal Load Capacity of Ordinary Chain
S (stress) Increasing Chain Load
Number of Times Load is Applied
N (number of cycles)

Red area: Under these chain loads, fatigue will break ordinary chain . . . but *not* Morse H-E.

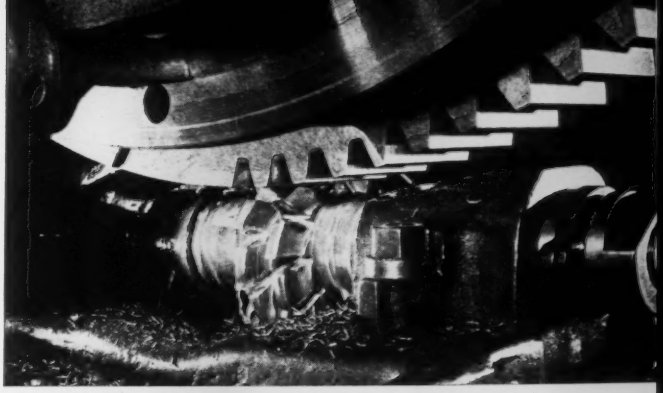
White area: Under these loads, fatigue will break ordinary chain and Morse H-E . . . but Morse H-E will have operated 100% to 500% longer.

IN POWER TRANSMISSION THE TOUGH JOBS COME TO **MORSE** MORSE B-W BORG-WARNER

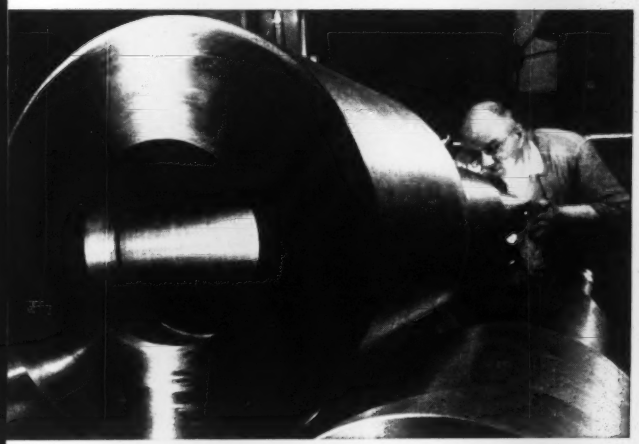
*Trademark

REMEMBER: Only Morse offers you all four of these basic drives: Roller Chain, Silent Chain, Hy-Vo®, and "Timing"® Belts.

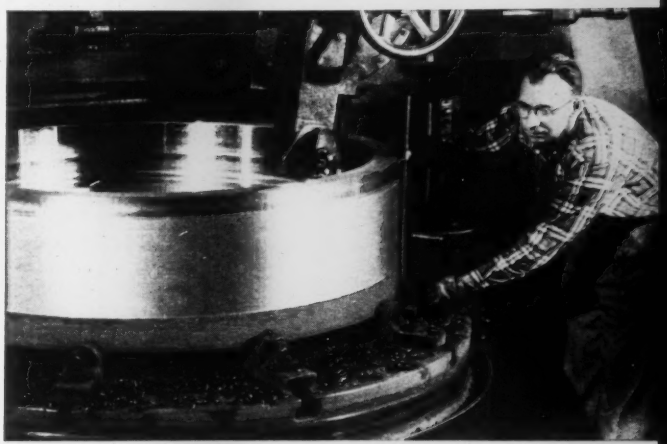
SAVES $150 PER GEAR—In cutting a double-web design fabricated gear on a gear generator, tool cost formerly averaged $180 per gear. By switching to ALCO Hi-Qua-Led Steel with its lower friction component, tool wear is reduced, and manufacturer reports savings of approximately $150 per gear.



8-HOUR JOB DONE IN 3—Another manufacturer reports that roughing and finishing a gear required a total of 8 hours and 8 minutes on his gear cutter. With freer-machining Hi-Qua-Led Steel and the increased speeds and feeds it permits, the job is now completed in just 3 hours and 10 minutes.



700% INCREASE IN TOOL LIFE—In trepanning a 4 in. diameter hole 42½ in. long with a Warner & Swasey lathe, tool life averaged one piece per tool. With Hi-Qua-Led, 8 pieces are now obtained with the same tool. Manufacturer reports that Hi-Qua-Led Steel also provides much better chip formation.



TOOL DOES 3 TIMES THE WORK—With Hi-Qua-Led Steel, a King boring mill operation that once required 3.4 hours is off the machine in 43 minutes. Through the lower frictional properties of Hi-Qua-Led Steel, the manufacturer obtains 10 pieces per tool grind as compared to 3 pieces obtainable with non-leaded steel.

HOW ALCO'S EASY-MACHINING HI-QUA-LED STEEL* FORGINGS CAN CUT YOUR PRODUCTION COSTS

The easy machinability of ALCO's Hi-Qua-Led Steel® forgings is setting new production records throughout industry. In case after case, a switch to Hi-Qua-Led Steel forgings has resulted in greatly reduced machine time, longer tool life and improved surface finish with closer tolerances.

These unique cost-cutting benefits are provided by Hi-Qua-Led Steel forgings with all the other physical characteristics of regular steel in the same AISI grade. You get the same service in your end product.

ALCO specialists will be happy to demonstrate these profit-boosting characteristics on your own machines, in your own plant. Forgings are available in seamless rolled circular shapes from 18 to 145 in. OD, in open-die shapes from 1,000 to 30,000 lb and 40 ft long, and in mandrelled seamless circular shapes up to 60 in. wide.

For a technical booklet on Hi-Qua-Led Steel forgings, write ALCO Products, Inc., Dept. 155, Schenectady 5, N. Y.

***HI-QUA-LED STEEL**—ALCO's registered trademark for its special process leaded steel forgings that are making outstanding reductions in machining time, tool wear and production costs.

ALCO

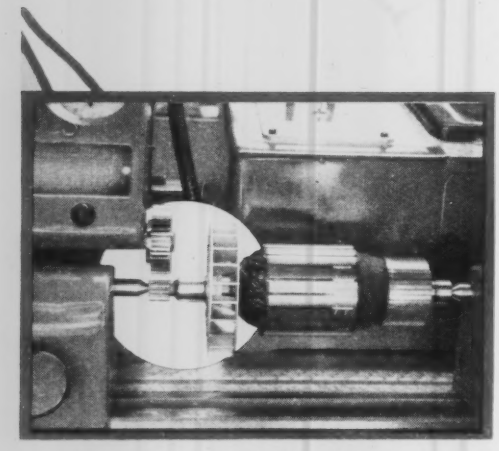
ALCO PRODUCTS, INC.

NEW YORK

SALES OFFICES IN PRINCIPAL CITIES

LOCOMOTIVES · DIESEL ENGINES · NUCLEAR REACTORS · SPRINGS · STEEL PIPE · FORGINGS · OIL-FIELD EQUIPMENT

GEARED to give lightweights heavyweight power!



Fellows Inspection Instrument checks gear at a major gear-motor manufacturer. Integrated Fellows production and inspection equipment assures dependable quality control.

Power used to mean *weight*, too, but not any more; modern gear-motors pack immense power in a small volume, deliver maximum output per pound. Light executive aircraft use powered accessories only large planes could carry ten years ago. Products as diverse as home appliances and machine tools have grown steadily more powerful while shrinking in size and weight.

Accurate, dependable gears produced on Fellows equipment are essential to the performance of many of these mighty midgets. Their operation must be relatively smooth and quiet, even with the high reduction ratios required in many of them. Here, as in many other applications, Fellows Gear Shapers combine accuracy with production speed and low unit cost.

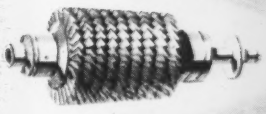
Your own gear production needs, from 1/16" to 120" pitch diameter, can probably be met more efficiently and profitably with Fellows equipment. For full information, get in touch with any Fellows office.

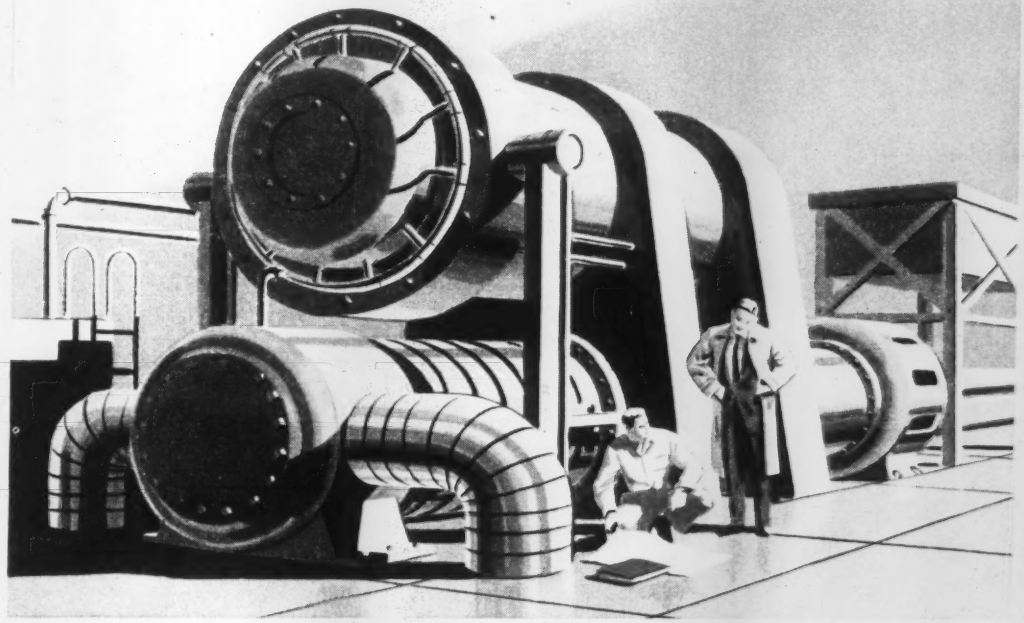
THE FELLOWS GEAR SHAPER COMPANY
78 River Street, Springfield, Vermont
Branch Offices:
1048 North Woodward Avenue, Royal Oak, Mich.
150 West Pleasant Avenue, Maywood, N. J.
5835 West North Avenue, Chicago 39
6214 West Manchester Avenue, Los Angeles 45

THE PRECISION LINE

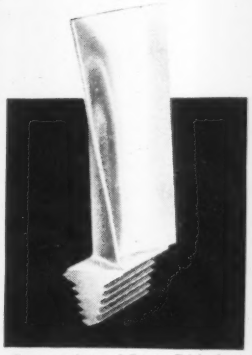
Fellows *Gear Production Equipment*

Reliability...
proved beyond the Sound Barrier





CURMET Precision Forged Industrial TURBINE BLADES



Custom-forged CurmeT blades meet any turbine requirement.

What better assurance of reliability in gas turbine blading than a heritage of supersonic success?

The precision forged blades chosen for these 10,000 h.p. industrial gas turbines were formed and finished by Curtiss-Wright to quality standards set for jet aircraft engines.

Whether driving compressors in a petrochemical plant or generating steady power in a refinery, the turbine—gas or steam—is as reliable as its blading. That is why leading turbine and compressor manufacturers turn to the multi-million blade experience of the Curtiss-Wright Metals Processing Division. Users, too, whose plant and process engineers select axial flow equipment, stand to profit by specifying CurmeT blades, buckets and vanes.

CurmeT Prototype Service offers experienced blade engineering and a pilot shop to speed your designs from drawing board to volume production in the Metals Processing Division's fully integrated facility.

FOR FULL INFORMATION, WRITE TO

METALS PROCESSING DIVISION
80 Grider Street

CURTISS-WRIGHT CORPORATION
Buffalo 15, New York

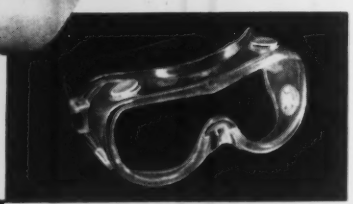
Give your men the Protection and Comfort of AO's NEW FLEXIBLE MASK GOGGLE SERIES

Eye Protection

Here's a great new *series* of light, comfortable, flexible mask goggles which retain the comfort of the previous series — with a smoother face — hugging fit at the nose and temples! Particularly noteworthy is the LARGER, MUCH DEEPER MASK — affords greater protected area and fits easily over Rx and personal glasses. Lens is interchangeable, one-piece acetate curved slightly for wider vision. Headband is easily adjustable elastic.

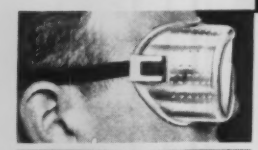
482A — clear frame, clear or green lens. (483A with green frame). For protection against flying particles in babbitting, chipping, cutting rivets, light grinding, hand or machine tool work or where spark-explosion hazards exist. Note ample perforations for ventilation.

482A — For Impact Protection



484A — For Chemical Splash Protection

484A — Basic structure similar to the 482A but with four ports (instead of perforations). Provides safe indirect ventilation and anti-fogging while protecting against chemical splashes. Resistant to acids and alkalies. Clear frame, clear or green lens. (485A with green frame).



Deeper cup — increased lateral protection. Easily fits over safety Rx and personal glasses.

Modified nosepiece. Aids comfort and fit.

486A — For protection against dangerous light rays, glare, flying sparks and scale in acetylene welding, cutting, burning, brazing and furnace work. Has black lens adapter which takes the standard AO lens and regular 50mm. round filter lenses and cover lenses. Goggle has Noviweld filter lenses, shades 3, 4, 5, 6. For chipping and grinding, companion Model 489A comes with clear frame, clear transparent adapter and Super-Armorplate lenses.

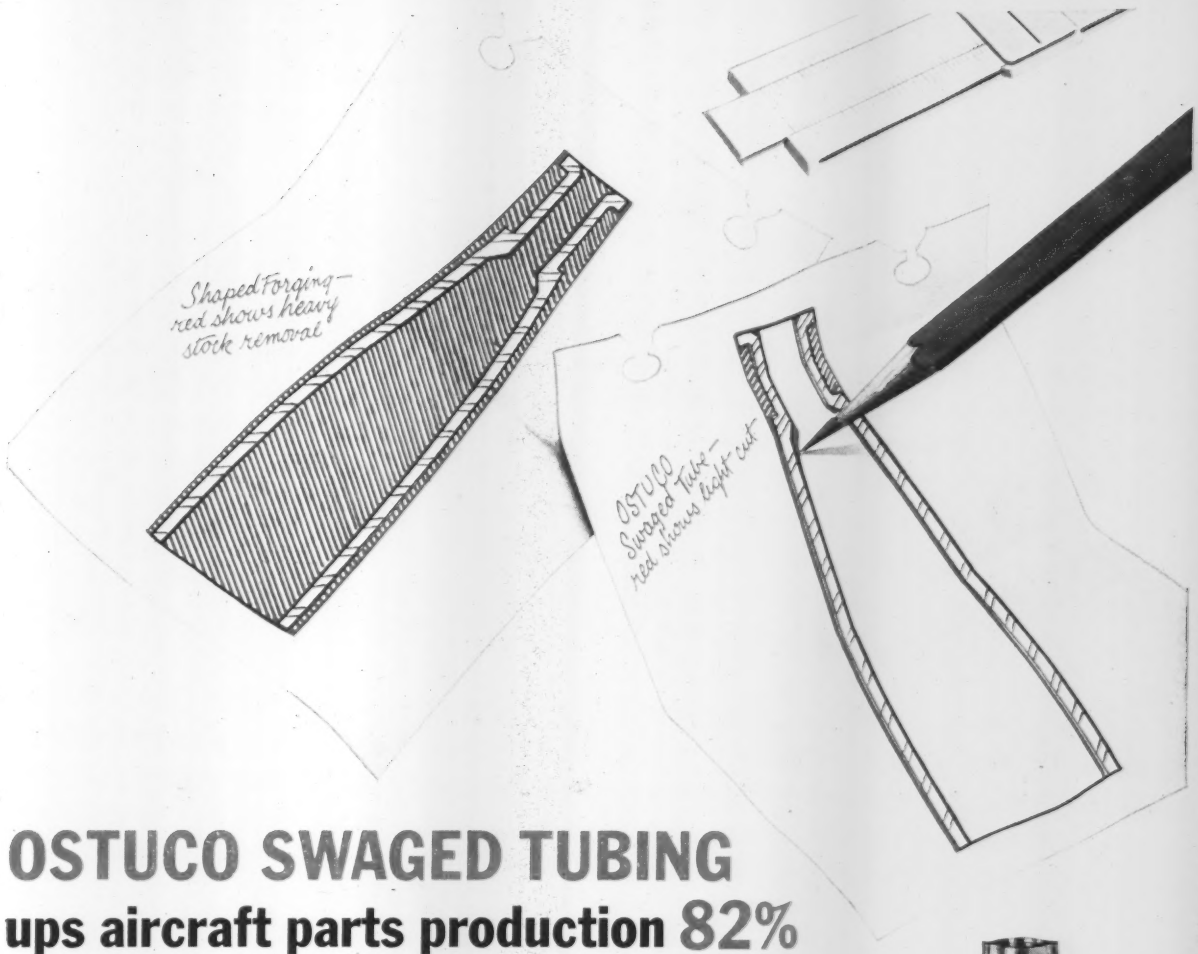
487A — Similar to our 483A except for *transparent* green frame. For maintenance men, truck drivers and factory workers where glare from overhead lighting is a problem and where impact protection is needed.

American Optical
COMPANY
SAFETY PRODUCTS DIVISION

Always Insist on the AO Trademark on Lenses and Frames

1833-1958 • 125 LEADERSHIP YEARS

SOUTHBRIDGE, MASSACHUSETTS
Safety Service Centers in Principal Cities



OSTUCO SWAGED TUBING

ups aircraft parts production 82%

Hogged out of a shaped forging, this vital aircraft part in SAE 4140 took 400 minutes to machine.

So the producers, The "Special" Corporation, brought their problem to Ohio Seamless. The solution—an Ostuco Swaged Tube.

Now the chips are down . . . and so is machining time. Down to 220 minutes—*a saving of 180 minutes per part*—with a whopping 82% increase in parts production per workshift.

Chances are Ostuco Tubing can put *you* on velvet, too. The first step is to contact your nearest Ohio Seamless sales office, or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.*

AA-8112

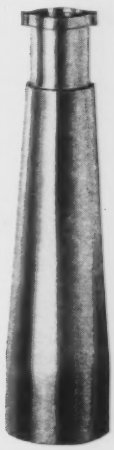


Photo: Courtesy The "Special" Corporation, Brooklyn, N. Y.

FIFTY YEARS
OSTUCO SHELBY OHIO
OSTUCO TUBING
1908 1958

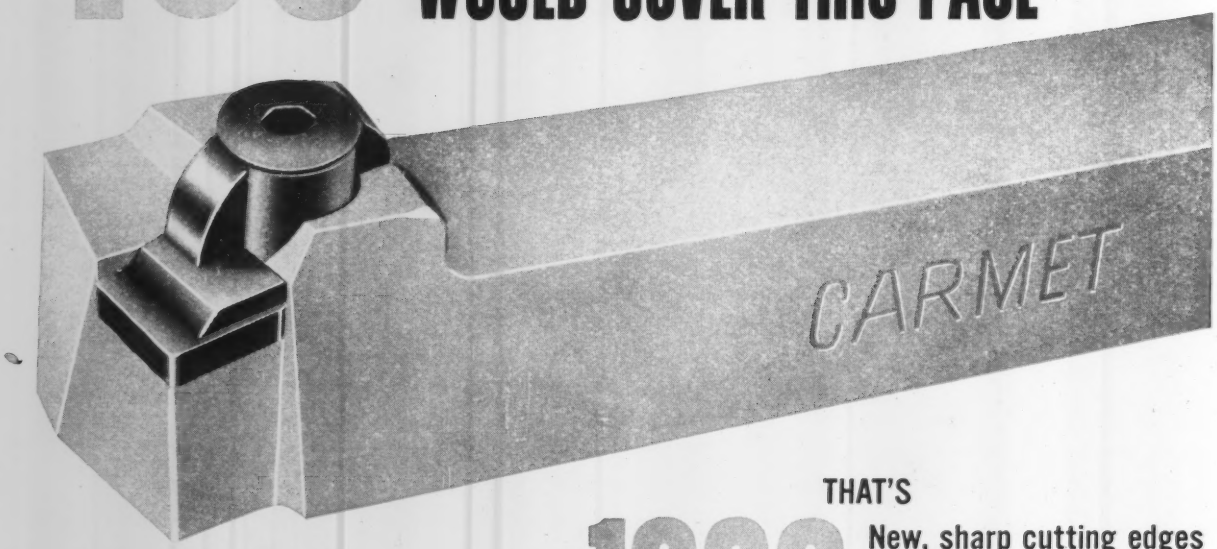
OHIO SEAMLESS TUBE DIVISION

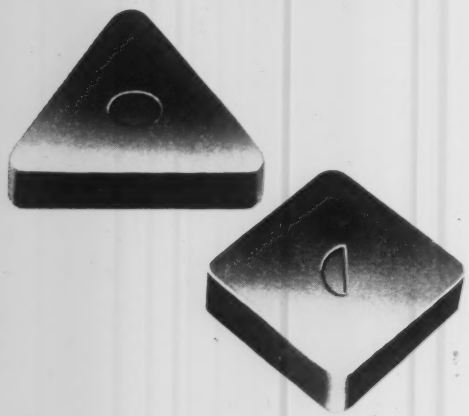
of Copperweld Steel Company · SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

SALES OFFICES: Birmingham, Charlotte, Chicago (Oak Park), Cleveland, Dayton, Denver, Detroit (Huntington Woods), Houston, Los Angeles (Lynwood), Moline, New Orleans (Chalmette), New York, North Kansas City, Philadelphia (Wynnewood), Pittsburgh, Richmond, Rochester, St. Louis, St. Paul, St. Petersburg, Salt Lake City, Seattle, Tulsa, Wichita. CANADA: Railway & Power Engr. Corp., Ltd. EXPORT: Copperweld Steel International Company, 225 Broadway, New York 7, New York.

165 CARMET INDEXABLE SQUARE CARBIDE INSERTS WOULD COVER THIS PAGE





THAT'S

1320 New, sharp cutting edges for about 10¢ each to do almost all metal cutting jobs

THEY'D REPLACE

1320 Individual, brazed single-point tools.
No tool regrinding.
Minimum tool changing.

Over 118 styles and sizes of Indexable Inserts to use in Carmet high-alloy, cadmium plated Tool Holders in both positive or negative rake types.

Write for new Catalog C-16

CARMET CEMENTED CARBIDES FOR INDUSTRY

This 32-page first edition contains prices and complete specifications on Carmet's full line of cemented carbide tipped tools, Indexable Inserts, blanks and holders. Speed and feed charts, grade comparisons and ordering information included.

ADDRESS DEPT. S-11

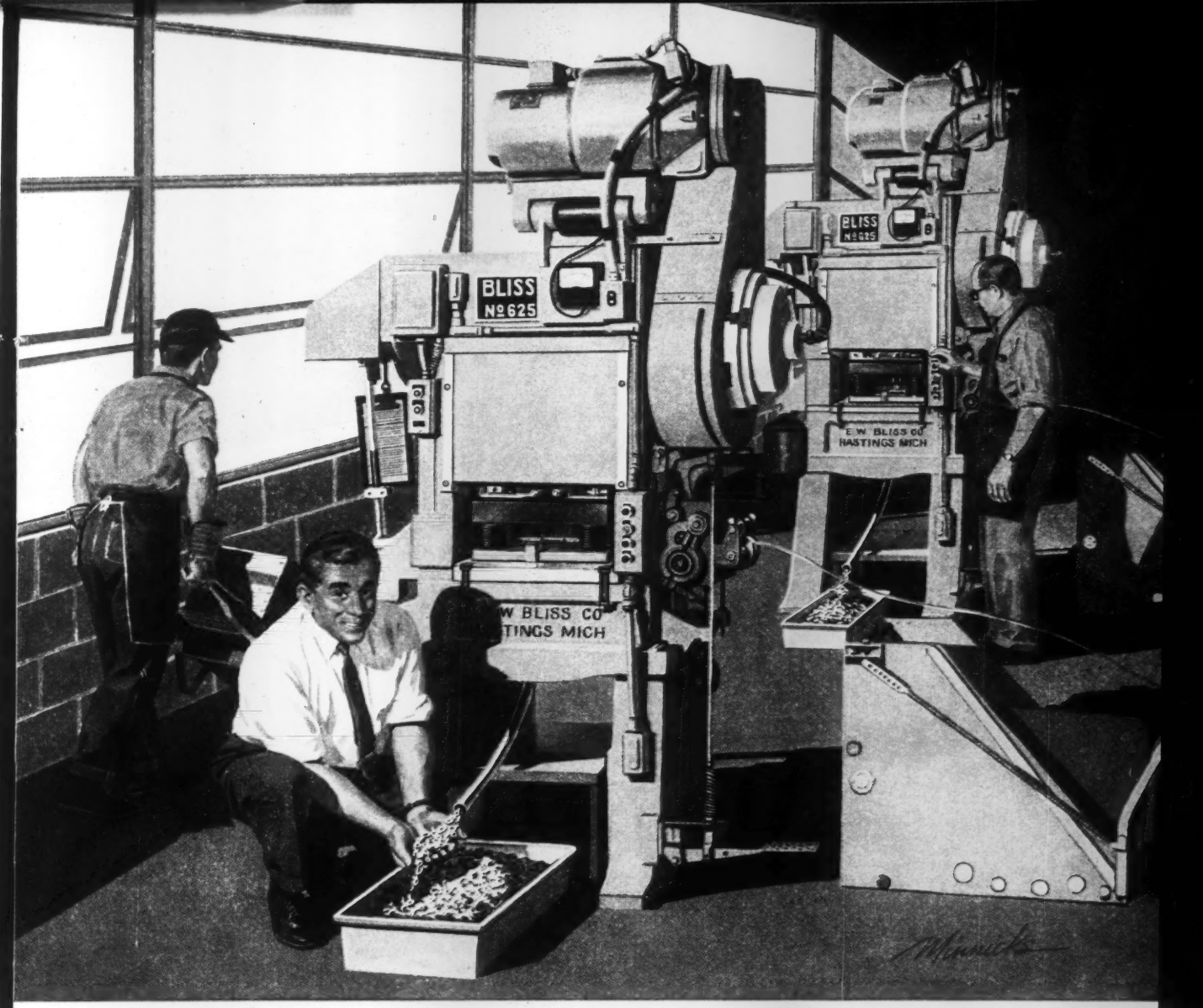
Why not find out more about Carmet Indexable Inserts and the complete line of Carmet cemented carbide tools and standard blanks? Your Carmet distributor carries them in stock, assures prompt delivery and will aid you in selecting the proper grades and styles to cut your metalworking costs. Call him today or write Allegheny Ludlum Steel Corporation, Carmet Division, Detroit 20, Michigan.

WSW-7323

CARMET

CEMENTED CARBIDE DIVISION OF
ALLEGHENY LUDLUM STEEL CORPORATION

AL



"I get 1200 parts a minute from each of these presses...

...all day long!" And production like that continues day in, day out. For Bliss High Production presses are especially designed for continuous high speed operation. Counterbalanced shaft, massive tie rod frame... square gibbing...features like these add up to *enduring* speed. For ease of operation there's ample room in front and back for die setting and space *under* the press for tote boxes or stacking chutes. Naturally, if you use large quantities of stampings this is the press that makes them. You will, however, be surprised to learn, that H-P presses can be set up so quickly and efficiently that more and more firms are using them for short run work.

BLISS
SINCE 1857

E. W. BLISS COMPANY · Canton, Ohio

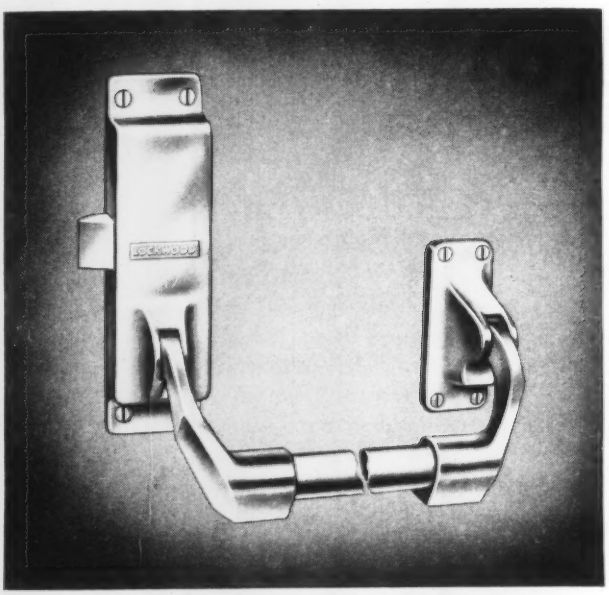
BLISS is more than a name... it's a guarantee

PRESSES • ROLLING MILLS • ROLLS • DIE SETS • CAN MACHINERY • CONTRACT MFG.

Fire!

. . . and USS American Music Wire

CRUCIAL. In the hands of a skilled workman the vital spring goes in place in the Lockwood "Lock 'n Roll" panic exit device. In times of emergency and panic the lives of thousands of people depend upon the unfailing action of this little spring.



EVER READY to release and open the door at the lightest touch. Held in place in the "Up" position by the spring of USS American Music Spring Wire, this panic latch will open easily, smoothly at the touch of a finger tip.

CROWDS of children leaving a burning school—their safety depending upon the open door and on the smooth, perfect operation of the panic opening device. Latches of this kind are designed to meet and pass a supreme test of efficiency—a test they will probably never need to undergo. But should an emergency occur, the latch must operate completely and perfectly.

Because this "Lock 'n Roll Latch" panic exit device serves so vital a purpose, because it must give long, unfailing service, must open easily, instantly every time it is touched, the Lockwood Hardware Manufacturing Company, Fitchburg, Mass. spares no effort in design, manufacturing and selection of material to make this latch as perfect as possible.

For the latch to operate properly, the cross bar must remain in the "Up" position, ready to release the door at the lightest touch. To hold the bar in this position is the job of a very vital, specially designed spring—made of USS American Music Spring Wire.

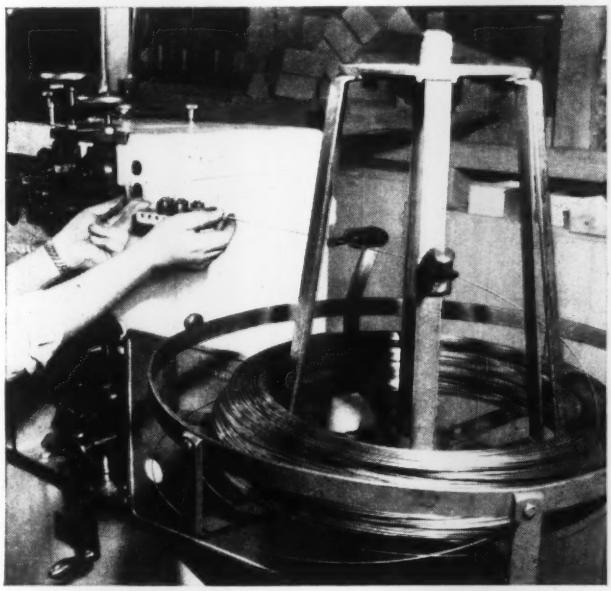
In their search for a wire to make the spring for the panic exit device, the Lockwood Hardware Manufacturing Company selected USS American Music Spring Wire for its complete dependability, its consistent uniformity and its superior quality. The experience gained in 125 years of wire drawing and manufacturing has stood American Steel & Wire in good stead in supplying the high-quality Music Spring Wire required by the Lockwood Hardware Manufacturing Company.

If you have a product involving the use of spring wire or any other type of wire, get in touch with American Steel & Wire. The same controlled quality, dependability, and uniformity are available to every fabricator who uses USS American Manufacturers Wire in the products he produces. Just write to American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio.

American Steel & Wire Division of USS United States Steel

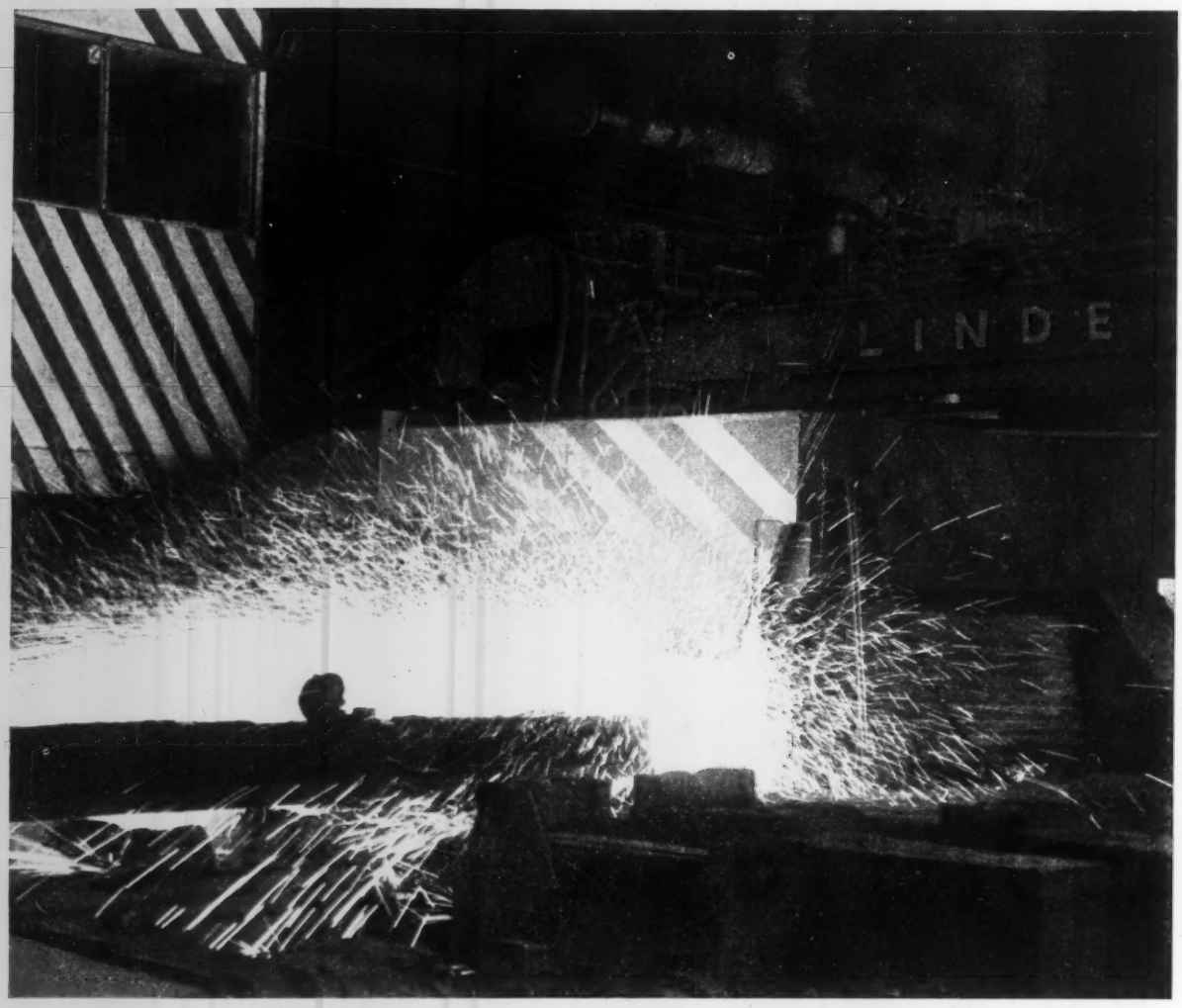
Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

makes sure the door opens!



8,000,000 A MONTH. Shown here USS American Music Spring Wire is being fed into a Sleeper & Hartley spring coiler. The Lockwood Company uses ten spring coilers and one torsion machine to produce the 8,000,000 springs they use a month.

INSPECTION. Important final inspection for Lockwood spring assures that this spring will have the necessary dependability and reliability to meet the rigid requirements of a panic door exit device used on schools and other buildings.



LIN-DE-SURFACER MACHINE HOT-SCARFS 4.27 MILLION TONS IN 27 MONTHS

Weirton Steel Company, Division of National Steel Corporation, set the record. Of the 65 *Lin-de-Surfacer* machines serving steel plants throughout the world today, this is the champ—4.27 million tons in just 27 months.

Mechanized scarfing is the fastest, most economical way to upgrade surface quality. Your costs depend on your production because you lease the *Lin-de-Surfacer* machine on the basis of the tonnage it processes. It can be rolled on or off the production line in seconds. Scarfing speeds can reach 195 ft./min.

And—most important—savings over hand-conditioning methods are estimated conservatively at $1.50 per ton—are often much higher.

Linde Company—a leader in the production and distribution of oxygen and acetylene—pioneered the development of mechanized scarfing. To find out how hot-scarfing can help your operations, call the nearest Linde office. Or write Linde Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N.Y. In Canada: Linde Company, Division of Union Carbide Canada Limited.

Linde TRADE-MARK

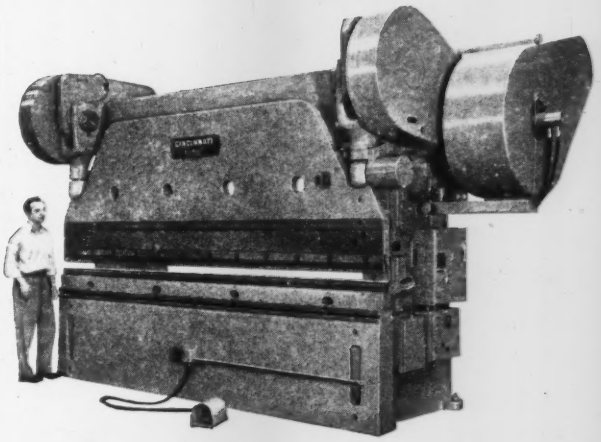
UNION CARBIDE

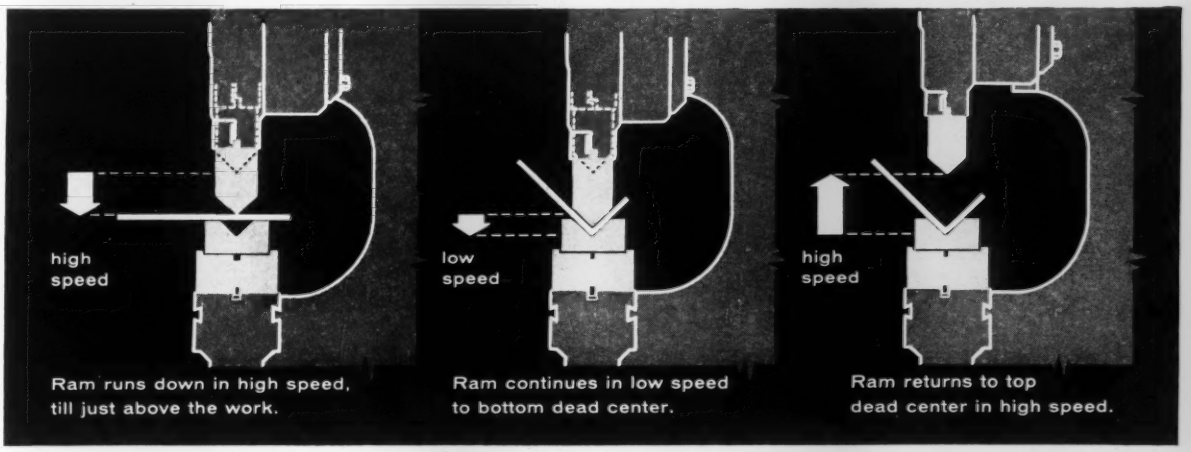
"Linde," "Lin-de-Surfacer," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

10 to 60% increase in production makes

CINCINNATI® AUTOMATIC CYCLE

the most important press brake development in years!




high speed
low speed
high speed
Ram runs down in high speed, till just above the work.
Ram continues in low speed to bottom dead center.
Ram returns to top dead center in high speed.

Cincinnati® Automatic Cycle is a brand new feature which automatically provides two speeds to the ram for each stroke. It eliminates the "whip-up" of a sheet's free end that occurs when light gauge metal is formed over a small die opening at high speed.

Unlike previous attempts at reducing whip-up, the Automatic Cycle does not slow down the entire stroke of the press brake's ram. Nor does it require clutch slipping, which depends entirely on operator skill and at best is unreliable.

Think what these advantages can mean for you:

1. Actual job records show 10% to 60% increase in parts produced per hour.
2. You can set the length of the low-speed working portion of the ram stroke. Once this is set, all strokes are identical, which insures absolute consistency in the work.
3. Work spoilage (such as back bends caused by whip-up) is eliminated.
4. Highly experienced operators are not required.
5. Operator fatigue is greatly reduced by eliminating clutch slipping.
6. Clutch and brake are long-life, minimum-maintenance units requiring no adjustments.

This productive new feature is available now on all 7 and 9 Series Cincinnati Press Brakes.

Write Dept. C for Bulletin B-9R, which gives full details about Cincinnati® Automatic Cycle.

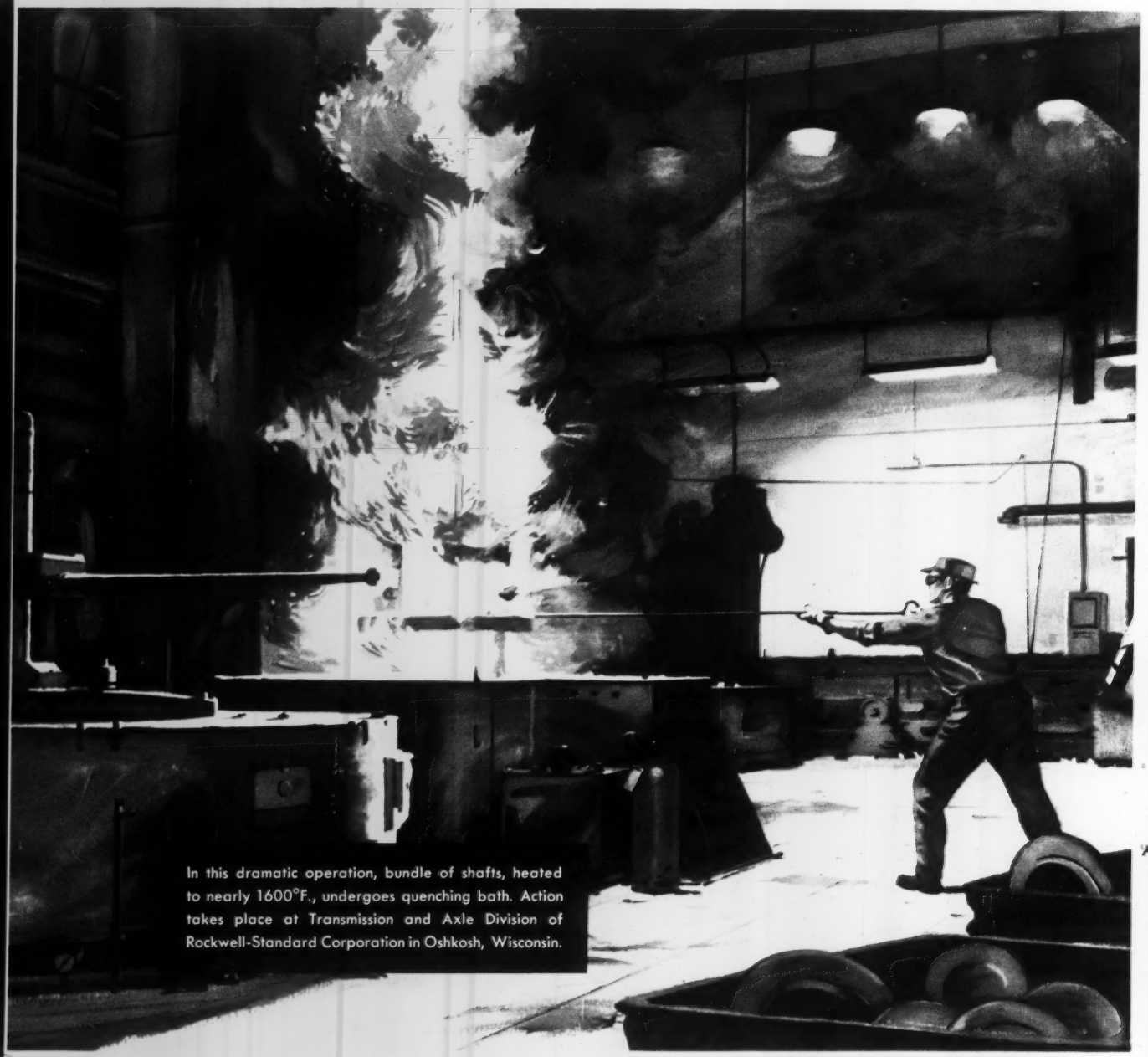
Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio, U.S.A.

Correct Lubrication in Action...

43,907 machine



In this dramatic operation, bundle of shafts, heated to nearly 1600°F., undergoes quenching bath. Action takes place at Transmission and Axle Division of Rockwell-Standard Corporation in Oshkosh, Wisconsin.

Mobil

Complete Engineering Program
Proved Petroleum Products

Mobil

SOCONY MOBIL OIL CO., INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP., MOBIL OVERSEAS OIL CO., INC.

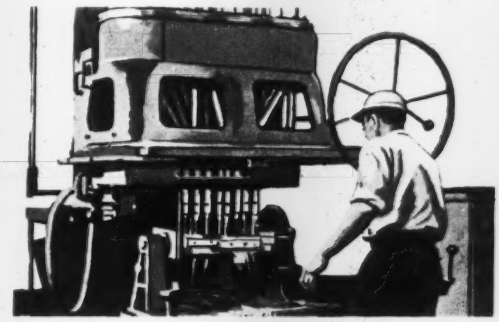
production hours saved!

In three years, Rockwell-Standard Corporation cut downtime over 36%—with the help of Mobil!

43,907 machine production hours! A worthwhile and profitable bonus. Rockwell-Standard Corporation's Transmission and Axle Division at Oshkosh, Wisconsin, made this saving through a Mobil Program of Correct Lubrication.

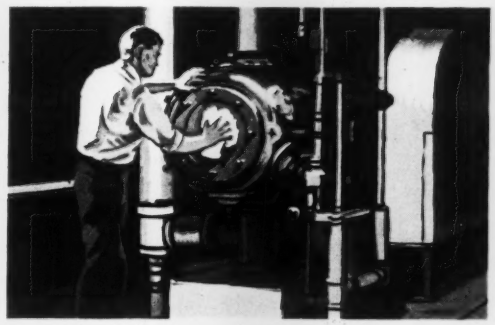
Plant maintenance engineers worked as a team with Mobil lubrication engineers. First, lubrication was put on a *scheduled* basis. This insured regular protection . . . cut thousands of repair hours. Oil contamination problems were solved . . . major repairs avoided. Mobil laboratories and Mobil specialists were called on for technical assistance.

In 1957 alone, this concentrated effort to reduce maintenance costs saved $33,063. In addition, dollars gained from increased production were many times this amount. This is *Correct Lubrication in Action!* Hundreds of plants have found it the answer to improved profits. Perhaps you will, too. Why not call a Mobil engineer and find out?

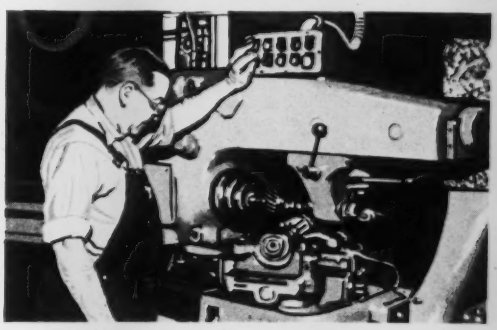


$19,520 saved on hydraulic-system maintenance. Valve failures caused severe production loss on multiple-spindle drills, boring machines and grinders. Mobil product solved problem . . . increased production by 4,000 hours per annum.

New storage and mixing tanks with automatic controls were installed as part of Mobil program. This system increased soluble-oil storage capacity . . . simplified oil purchasing . . . eliminated manual mixing of oil and water . . . saved $1,075 per year.



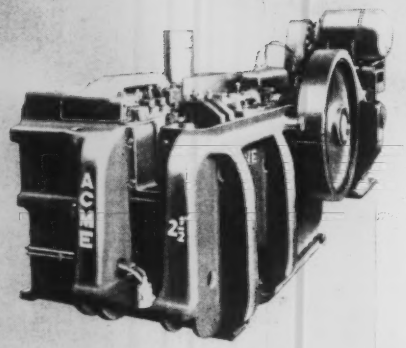
$3,000 air-compressor shutdown and overhaul avoided. Severe scoring was occurring in cylinder of vitally needed compressor. Mobil recommended oil that has kept compressor operating efficiently for past two years.



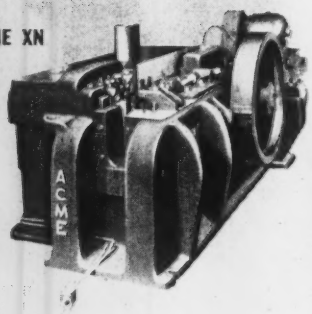
$27,225 saved on gear hobbers in 12-month period. Mobil and Rockwell-Standard personnel solved pump and fluid motor failures. New maintenance system reduced oil contamination, increased pump-motor life 400%.

Correct Lubrication

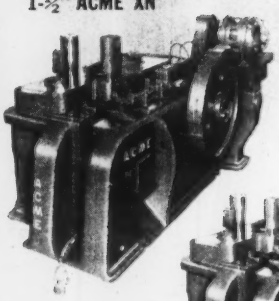
Another reason You're Miles Ahead with Mobil!



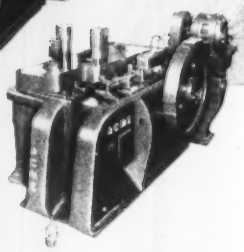
2-½" ACME XN



2" ACME XN



1-½" ACME XN



1-¼" ACME XN

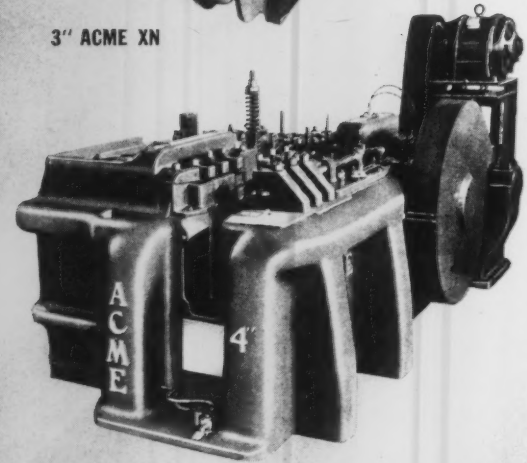
...and we can prove it!

We can prove to your satisfaction that it is uneconomical to rebuild or modernize ANY upset forging machine more than 25 years old. Temporary conditions may make a rebuilding program attractive but a new ACME XN forging machine in a size suited to your needs will pay for itself in:

Less down-time
Increased production
Better quality of forging
Lower maintenance
Greater versatility

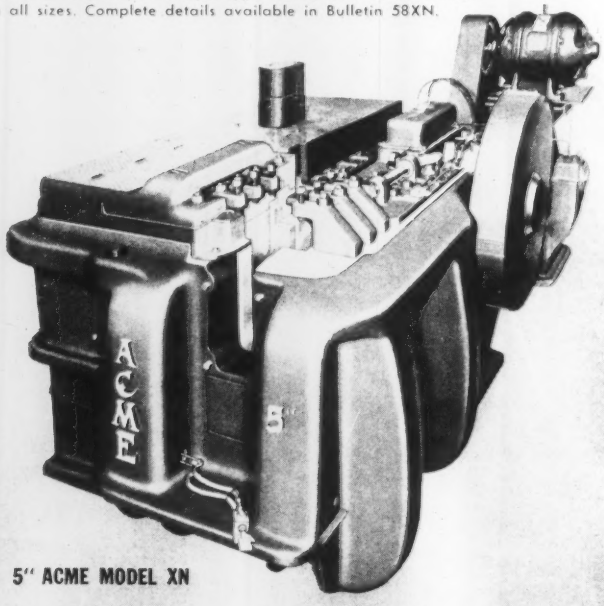
We can supply facts and figures to prove this statement.

Acme Model XN Forging Machines are made in seven sizes from 1¼" to 5" capacity. Conveyor type automatic feed is available on all sizes. Complete details available in Bulletin 58XN.



3" ACME XN

4" ACME MODEL XN

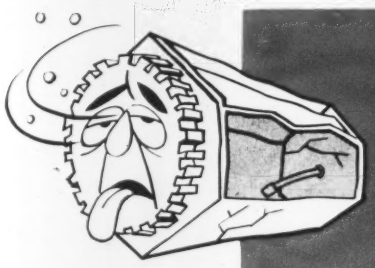


5" ACME MODEL XN

The HILL ACME Company

1207 W. 65th STREET • CLEVELAND 2, OHIO

"ACME" FORGING • THREADING • TAPPING MACHINES • ALSO MANUFACTURERS OF "HILL" GRINDING & POLISHING MACHINES
HYDRAULIC SURFACE GRINDERS • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES



"DON'T GET CAUGHT WITH YOUR PLANTS DOWN!"

Have UDYLITE *repair, replace plating barrels NOW...at low cost!*

Get ready today for tomorrow's upswing in business! Have your plating facilities geared to peak performance . . . avoid the risk of costly down time during peak periods of production. Take inventory of your equipment needs . . . and the condition of your plating barrel equipment. Then let your Udylite sales engineer give you on-the-job quotations for repairs or replacements. When your equipment is sent to Udylite . . . you are guaranteed a definite return delivery date. A special department handles your order all the way through . . . costly down time is kept to an absolute minimum.

REPAIRS OR REPLACEMENTS BY UDYLITE OFFER THESE ADVANTAGES:

1 IMMEDIATE QUOTATIONS given by Udylite salesman right in your shop!

2 ALL REPAIRS or REPLACEMENTS WITH GENUINE UDYLITE PARTS! You're assured of finest Udylite engineering, highest quality!

3 PARTS FACTORY INSTALLED by trained barrel equipment specialists.

4 FAST, GUARANTEED DELIVERY of equipment sent to Udylite. Special department set up to expedite your order.

Let Udylite help you get your entire plating operation in top working order, ready to go at top capacity. Your Udylite sales engineer will soon be calling on you. But if you need priority service write, phone or wire directly to:

PROJECT ALERT

the udylite corporation

detroit 11, michigan • world's largest plating supplier

NEW: ***Man-made Giraffe***

Unique Aerial Platform Moves On Cylinders Made From Pittsburgh Tubes

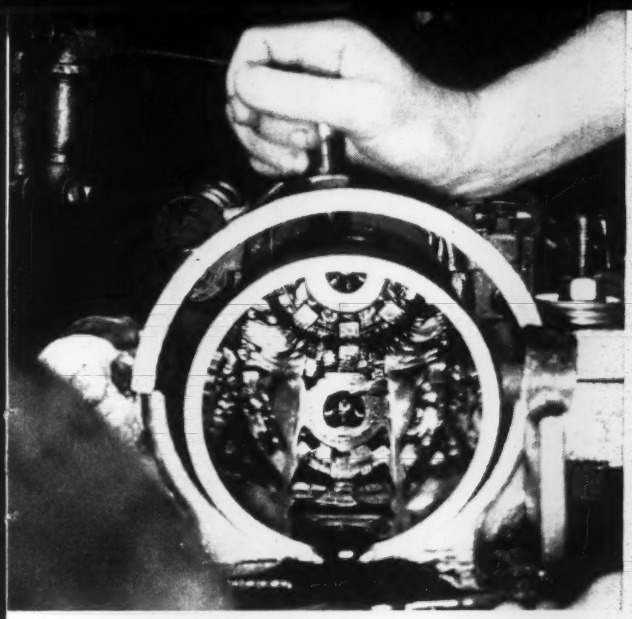
Giraffes are big business at Pitman Manufacturing Company.

Not the giraffes of the animal kingdom but ingenious hydraulic aerial platforms. These mechanical "Giraffes" are used for anything from de-icing a giant Air Force bomber to fighting fires in tall buildings.

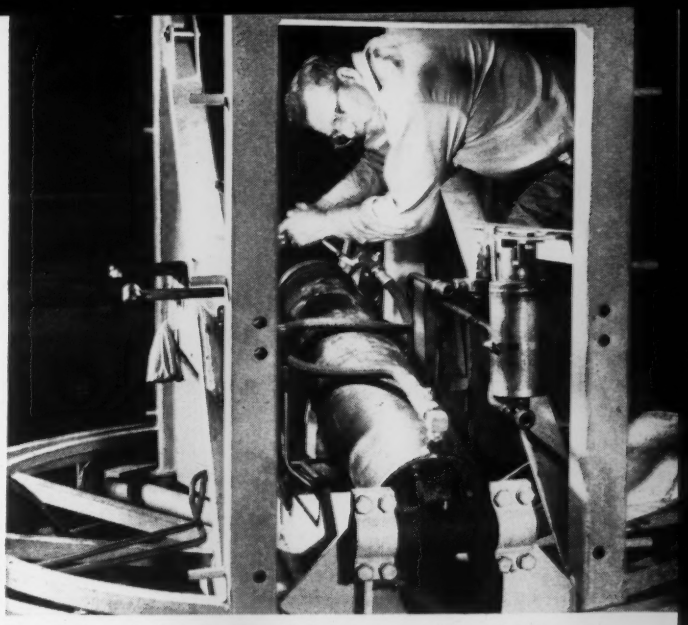
Pitman's truck-mounted Giraffes depend on hydraulic cylinders made exclusively of Pittsburgh Steel Company's seamless mechanical tubes. Giraffes are finding wide acceptance in varied industries because:

- Workmen can reach heights up to 65 feet in a fraction of the time and cost required by other methods. And their tools go up right with them.
- The roomy, insulated platform carries two men who can control all platform movements with controls duplicating those on the ground.
- The aerial platform can rotate a full 360 degrees in either direction in a radius as great as 35 feet.
- The largest of three models permits the 31-foot upper boom to move in a 160-degree vertical arc. The 23-foot lower boom can move in an 80-degree arc, so workmen can reach the exact spot they want.
- Hydraulic outriggers, operated independently, are raised or lowered by moving hand levers at side of truck.

Since hydraulic cylinders are vital to safe, dependable, economic operation of the Giraffe, Pitman makes its own cylinders with great care.



Horizontal honing of Pittsburgh Steel tubes is an exacting process. Inside the tube, you can see part of the hones. At the end of the tube, the hones are mirrored on polished steel.



Finished cylinder is installed on turntable of Pitman Giraffe. This cylinder supports and moves the lower boom. Completed Giraffe will be mounted on truck supplied by customer.

All Giraffe hydraulic cylinders are made from tubing produced by the Tube Mills of Pittsburgh Steel Company and sold by the Kansas City distributor, Metal Goods Corporation.

"We get high production from tubes because Pittsburgh tubes hold to close tolerances," declared Arthur Moore, vice president and general manager of Pitman Manufacturing. He added:

"We give Pittsburgh Steel tubes credit for cutting our scrap losses. But economy isn't all we're thinking of. Since we never forget that men's lives depend on our cylinders we build a safety factor of at least three into every cylinder. We've never had a burst cylinder or a cylinder wall failure with Pittsburgh tubes.

"Finally, Pittsburgh Steel gives us the kind of service we like."

Mr. Moore said engineers from Pittsburgh Steel helped analyze the company's tube problems, suggested some design changes and took Pitman's prints back to the mill to make tubing which exactly fills the bill.

"The service which Pittsburgh Steel instituted ended our tubing problems," said Mr. Moore. "Our cylinders have been very satisfactory ever since."

Whether you make hydraulic cylinders or use seamless mechanical tubing in another application needing uniformity, close tolerances and engineering help, you can profit by Pitman's experience.

Start today by getting in touch with trained help available through any Pittsburgh Steel Company District Office or from one of the Pittsburgh Steel distributors listed at right.

Fire-fighting is just one of many uses for the Pitman Giraffe. These firefighters can move their platform to any given spot quickly and easily without losing time when time counts most.

Pittsburgh Seamless Distributors

Baker Steel & Tube Company
Los Angeles, California

Chicago Tube & Iron Company
Chicago, Illinois

Cleveland Tool & Supply Co.
Cleveland, Ohio

Drummond McCall & Co., Ltd.
Montreal, Quebec, Canada

Edgcomb Steel Company
Philadelphia, Pennsylvania

Gilmore Steel & Supply Co.
San Francisco, California

Earle M. Jorgensen Co.

Perry Kilsby, Inc.
Los Angeles, California

Mapes & Sprowl Steel Co.
Union, New Jersey

Metal Goods Corporation
St. Louis, Missouri

Miller Steel Company, Inc.
Hillside, New Jersey

A. B. Murray Co., Inc.
Elizabeth, New Jersey

C. A. Russell, Inc.
Houston, Texas

Ryerson, Joseph T. & Son, Inc.
Chicago, Illinois

Solar Steel Corporation
Cleveland, Ohio

Steel Sales Corporation
Chicago, Illinois

Tubular Sales
Detroit, Michigan

Ward Steel Service Company
Dayton, Ohio

Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

District Sales Offices

Atlanta, Chicago, Cleveland, Dallas, Dayton, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Tulsa, Warren, Ohio

Tuffy® Tips On

SAFE USE OF SLINGS AND HOIST LINES

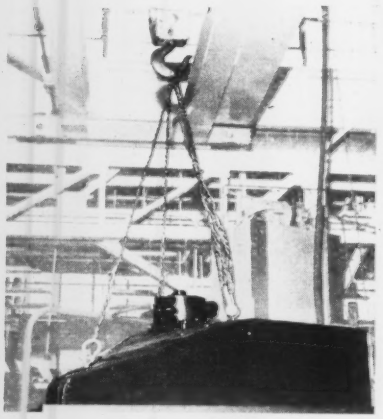
Back Injuries and Strains Loom Large in Industrial Accident Picture

Records for recent years in Illinois, as reported by the State Department of Labor, show an average of 8.9% of all compensation cases closed are for back injuries; another 7.4% for strains and overexertion in lifting or lowering. A total of about one in every six claims are for these two categories of injury.

How can we reduce materials handling accidents? The first answer, of course, is not to use human muscle for the heavy lifting jobs that should be done by the proper size hoist, hoist line and slings.

Here are some other answers:

1. **Keep pull** on sling legs in a straight line. Never shorten legs with knots or I-bolts. If choker and basket hitches are used as slings, safe load limits should be rigidly checked.
2. **Load slings** on the center of hooks; never at their points, except for hooks specially designed for point-loading.
3. **Never use** load hooks that are bent open. They have been overloaded, and may drop loads with disastrous results. Same goes for defective chain blocks. Insist that your men report them at once.
4. **Lubricate wire** ropes at regular recommended intervals, with lubricant recommended by your local oil company engineer.
5. **Break in** new wire rope with care. Don't use it as maximum load capacity until it is broken in.



Bad Use of a Good Sling

Here you see a Tuffy Sling in a poor, off balance hook-up. A Tuffy Type U-9, 3 leg bridle Sling would save time and work far more safely than this improvised hitch with unfitted slings and clevises.

Get Safety First With The First Name In Slings...

Tuffy®

Exclusive Tuffy Fabric

The secret of the extra strength and greater flexibility of Tuffy Slings is also the secret of their greater safety. It's the exclusive, patented, machine-braided fabric. You won't find it in any other machine-made sling. It means longer sling life, easier handling and greater capacity for taking deadloads, shocks and impact with safety.

Try to Kink a Tuffy Sling

It's next to impossible. Even if you do succeed in kinking it with the help of a vise, you can straighten out the sling with no material damage to the fabric. Tuffy's resistance to knotting, kinking and looping is extra protection against hazardous weakening of the sling.

Tuffy's Pressed-On Ferrule

Here's another Tuffy feature that adds safety to longer sling life. Applied under tremendous pressure, the steel ferrule literally flows into spaces between wires and strands—giving the eye-splice *full strength of the fabric.* And the streamlined ferrule eliminates snags and projections that might injure hands.

Your Tuffy Distributor is Stocked to Meet Your Needs—Fast!

He's ready with all your Tuffy Slings and Union Wire Rope needs. And ready to help you with any sling or wire rope problem. Get in touch with him now!

Right and Wrong Ways to Uncoil Wire Rope

RIGHT:

Wire rope in short lengths is furnished in coils. Roll the coil slowly like a wheel and have a nice straight rope before you can say "tuffy."

WRONG:

Uncoiling by laying the coil flat and pulling off the top gives you hard-to-handle, kinky rope. Frustrating and time-killing!

FREE! Tuffy Sling Handbook

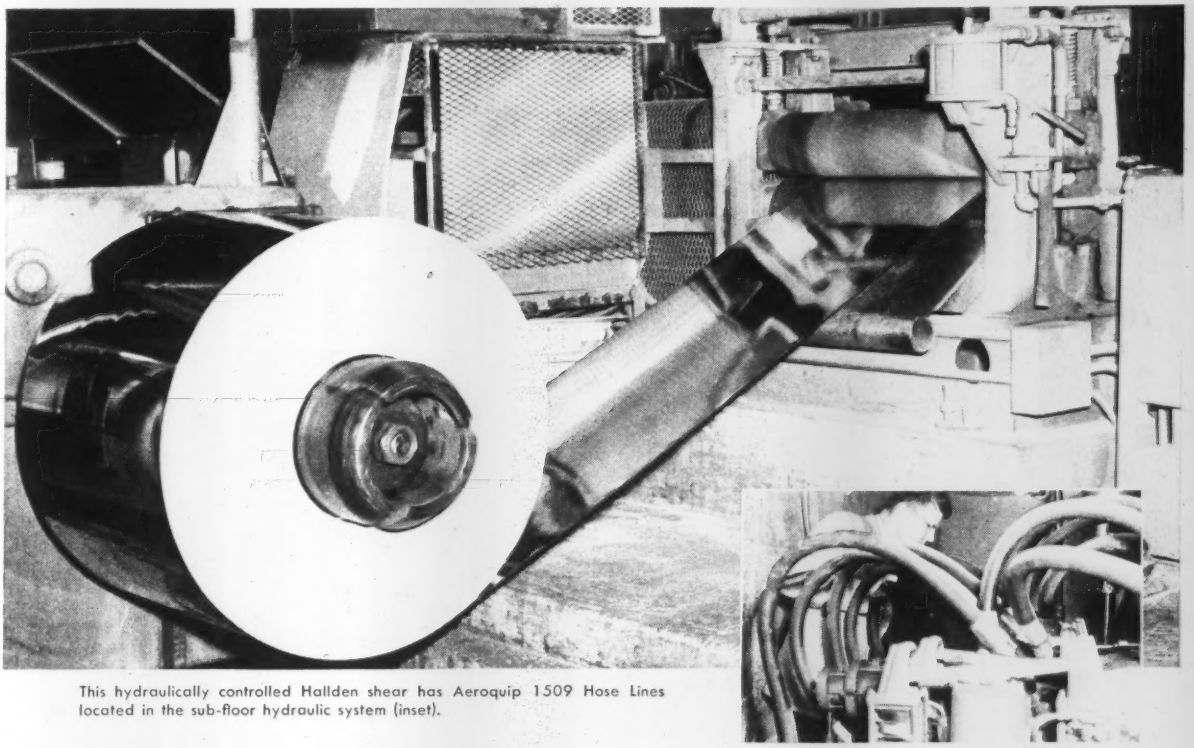
Gives complete data on Tuffy Slings — types, dimensions, weights and rate loads. Plus a complete rigger's manual and engineers notebook on wire rope constructions and specifications. Write for your copy now.

union Wire Rope corporation

SUBSIDIARY ARMCO® STEEL CORPORATION

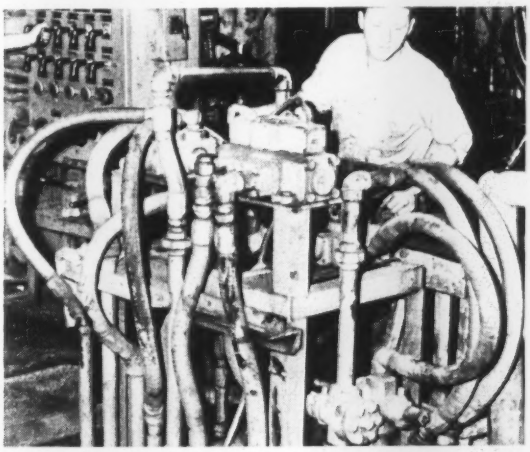
Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.

2160 Manchester Ave. **Kansas City 26, Missouri**



This hydraulically controlled Hallden shear has Aeroquip 1509 Hose Lines located in the sub-floor hydraulic system (inset).

Kaiser Steel Mill Uses Aeroquip Hose Lines



One of the few above-floor hydraulic systems is this temper mill installation. Aeroquip 1509 High Pressure Hose Lines shown have the flexibility to resist vibration and shock.

Fontana, California Strip Mill Has Flexible Hose Lines On All Hydraulic Systems

Flexible hose lines withstand shock and vibration, giving longer service life on equipment subject to these strains. At Kaiser Steel Corporation's Fontana, California strip mill, Aeroquip Flexible Hose Lines are used on all hydraulic systems. A minimum inventory of Aeroquip Bulk Hose and Reusable Fittings meets Kaiser's wide range of size and pressure requirements.

Simplify your fluid line maintenance the Aeroquip way. Use Aeroquip Hose and Reusable Fittings to make all replacement lines as you need them, right in your plant. Call the Aeroquip Distributor listed in your Yellow Page Phone Book for details on this time and money-saving idea.

Aeroquip

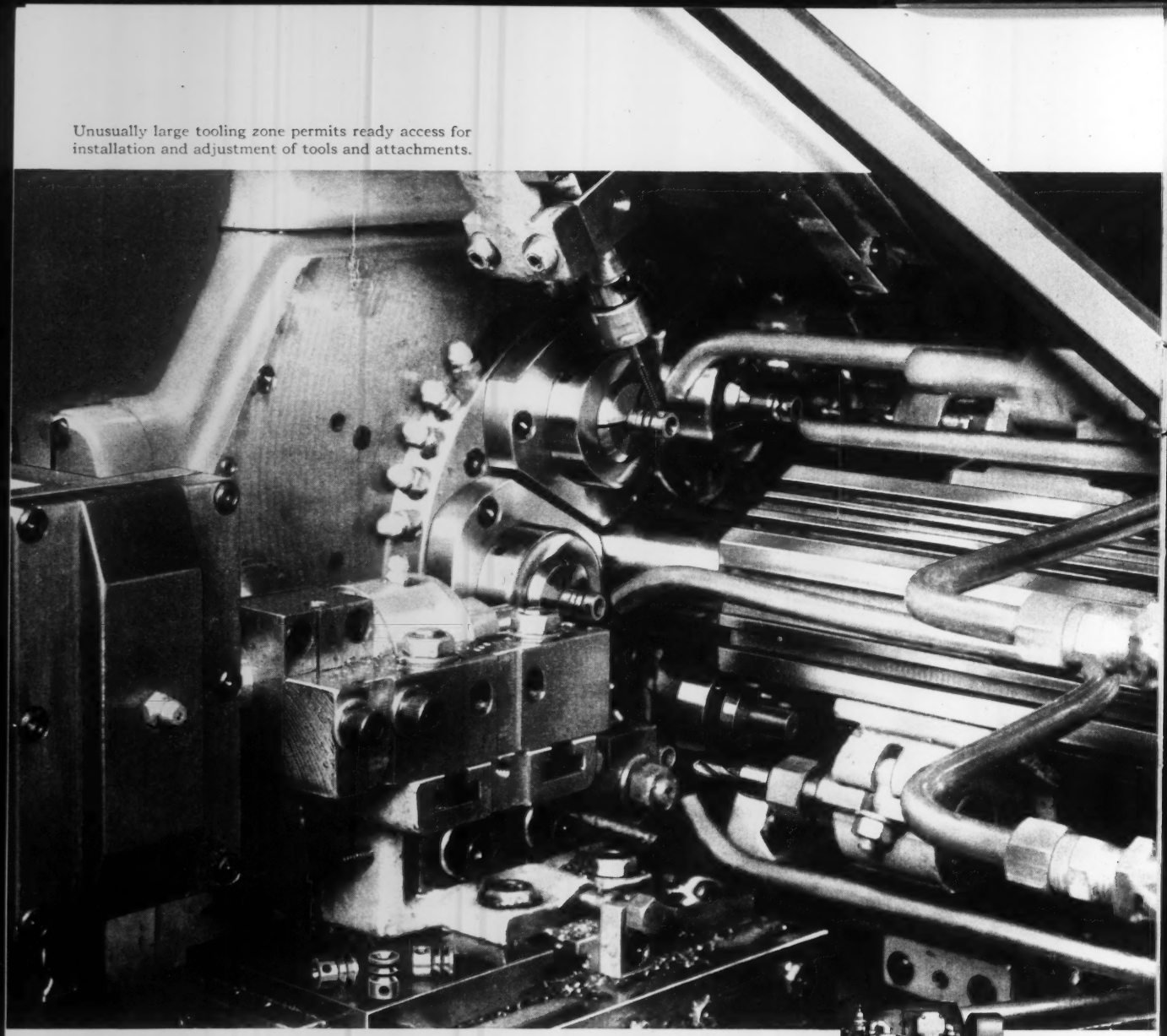
REG. TRADEMARK

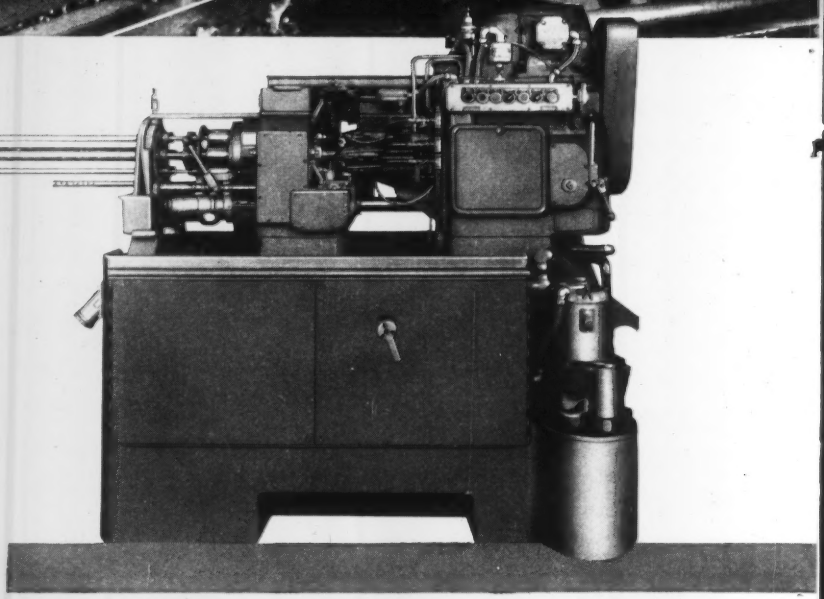
AEROQUIP CORPORATION, JACKSON, MICHIGAN

INDUSTRIAL DIVISION, VAN WERT, OHIO • WESTERN DIVISION, BURBANK, CALIFORNIA
AEROQUIP (CANADA) LTD., TORONTO 19, ONTARIO

LOCAL REPRESENTATIVES IN PRINCIPAL CITIES IN U.S.A. and ABROAD • AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. and ABROAD

Unusually large tooling zone permits ready access for installation and adjustment of tools and attachments.



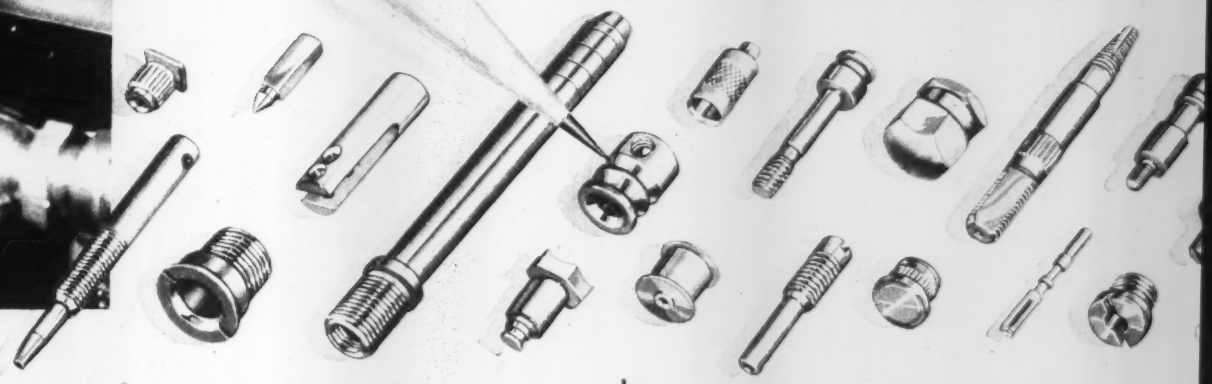


Call - Write - Wire - for the complete story on the industry's most modern approach to machine tool engineering . . . dedicated to low cost, mass production of small to miniature parts. Ask for Bulletin MRA-58.

THE 7/16" SIX.....

NEW ACME-GRIDLEY CONCEPT IN MULTIPLE SPINDLE AUTOMATICS

Longer runs without adjustment . . . greater sustained accuracy at lower cost . . . than any comparable machine in the industry!



. . . and we can prove it!

- **6 PRECISION SPINDLES** speeds up to 5200 r.p.m.
- **POSITIVE, DIRECT CAMMING** assures lasting accuracy
- **INDEPENDENTLY OPERATED TOOLSLIDES** greatly increase flexibility
- **RIGID, BOX-TYPE FRAME** provides the "beef", properly distributed that contributes to consistent accuracy at continuous high speeds

Remember...when you buy an Acme-Gridley 7/16" Multiple Spindle Bar Automatic, you're getting the newest, smallest, fastest machine from the world's *only* complete line of multiple and single spindle bar and chucking automatics. We've been making and improving them for 60 years . . . we think we know how!

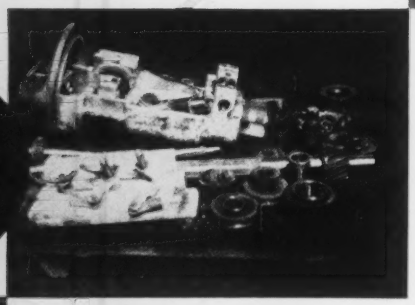
National Acme

THE NATIONAL ACME COMPANY, 189 E. 131st ST., CLEVELAND 8, OHIO • Sales Offices: Newark 2, N.J., Chicago 6, Ill., Detroit 27, Mich.

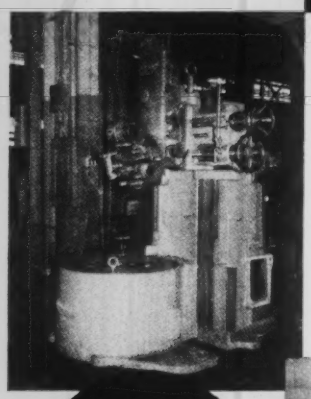
BULLARD

rebuilds from the ground up

Yes — we disassemble each machine right down to the bed.



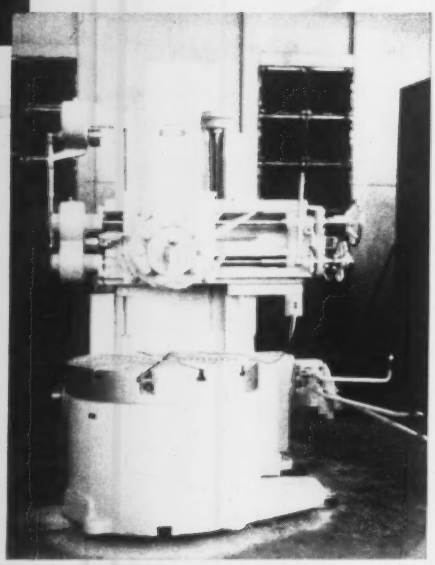
Each individual piece is cleaned and inspected



and if found serviceable is re-used, if not, it is replaced.

What does this mean to You?

1. Thorough workmanship by the same skilled craftsmen that built the machine.
2. Only "original equipment" precision replacement parts, where necessary.
3. Fast service.
4. One year guarantee on all parts replaced — including labor.

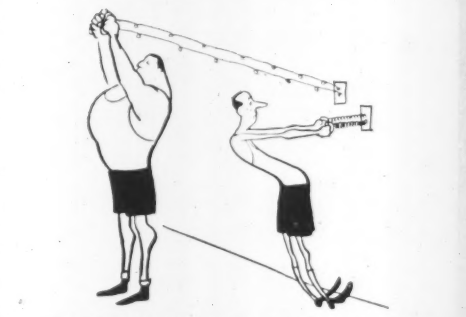


If you're planning to rebuild any of your Bullard machines contact your nearest Bullard Sales Office or Distributor for a quotation or write

BULLARD

THE BULLARD COMPANY BRIDGEPORT 9, CONNECTICUT

VISCOSITY COIL



EXECUTIVE COILS

SAFARI COIL

What do "Coils" mean to you?

Coils call to mind so many things. But if to you they mean springs, those mechanically precise activators of energy, then we're on common ground. Our organization specializes in all kinds—compression, extension, torsion, flat coil, volute . . . maintains unequalled engineering and manufacturing facilities throughout the nation. So let us supplement the work of your own engineers with our specialized knowledge and experience in the design and manufacture of springs, small stampings, and wire forms . . . made to your specifications.

Our "Picture Book of Springs" shows thousands of custom-produced parts, typical of our service. Write for a copy to pass along to interested people in your organization.

Associated Spring Corporation

General Offices: Bristol, Connecticut

Wallace Barnes Division, Bristol, Conn. and Syracuse, N. Y.
B-G-R Division, Plymouth and Ann Arbor, Mich.
Gibson Division, Chicago 14, Ill.
Milwaukee Division, Milwaukee, Wis.
Raymond Manufacturing Division, Corry, Penna.
Ohio Division, Dayton, Ohio
F. N. Manross and Sons Division, Bristol, Conn.
San Francisco Sales Office, Saratoga, Calif.
Seaboard Pacific Division, Gardena, Calif.
Cleveland Sales Office, Cleveland, Ohio
Dunbar Brothers Division, Bristol, Conn.
Wallace Barnes Steel Division, Bristol, Conn.

Canadian Subsidiary: The Wallace Barnes Co., Ltd., Hamilton, Ontario and Montreal, Quebec

5835

As an automatic feeding device slides another blank into the die, two DeVilbiss WDB Spray Guns apply a measured amount of lubricant—saving material, protecting dies, reducing rejects.

THESE SPRAY GUNS ARE SAVING $18,000 ANNUALLY!

"Applying die lubricants by the DeVilbiss Spray Method has cut our costs for compound, application, and press maintenance *in half*," reports the procurement engineer for one of the nation's largest refrigerator manufacturers. "What's more, malformed and broken parts have been practically eliminated.

"We are currently using the spray method on two 350-ton presses that form the housings for our rotary compressors. Originally, an extra man was required at each press to swab the compound by hand. We also tried dripping lubricant on rollers which transferred it to the stock. Both of these methods proved slow and wasteful with a high number of rejects.

"Now, by spraying the compound on the blanks automatically with two DeVilbiss WDB Guns, we get the *right* amount of lubricant in the *right* places. The result is a saving in material, fewer rejected parts, and fewer interruptions to remove 'breakouts' from the die. Downtime for press cleanup has also been substantially reduced."

If your manufacturing process involves the application of die lubricants, it will pay you to check the advantages of the DeVilbiss Spray Method. Call our nearest branch office for full details, or write: The DeVilbiss Company, Toledo 1, Ohio.

THE DEVILBISS COMPANY

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FOR BETTER SERVICE, BUY

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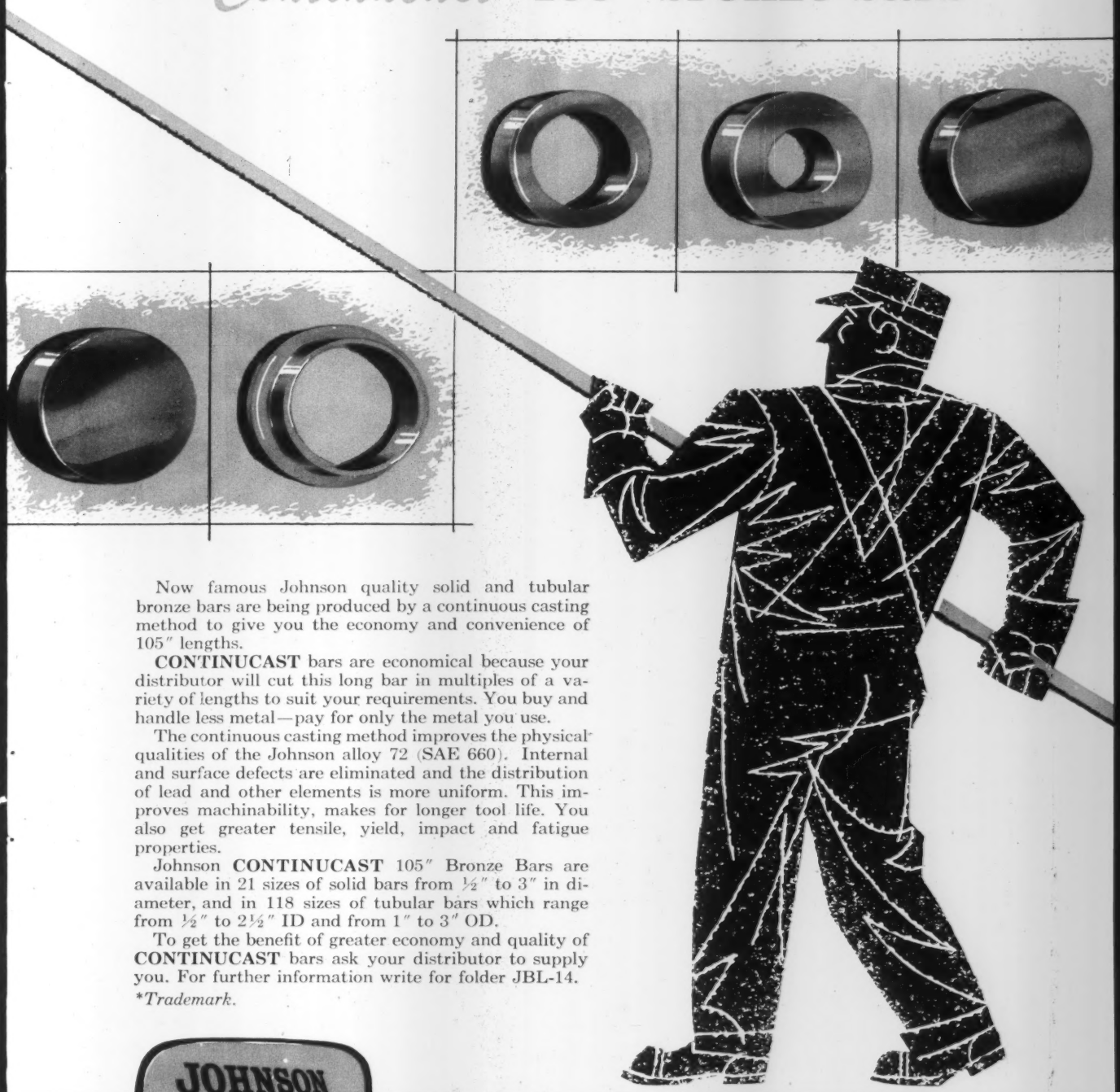
NOW greater economy, improved quality with JOHNSON *Continucast** 105″ bronze bars



Now famous Johnson quality solid and tubular bronze bars are being produced by a continuous casting method to give you the economy and convenience of 105″ lengths.

CONTINUCAST bars are economical because your distributor will cut this long bar in multiples of a variety of lengths to suit your requirements. You buy and handle less metal—pay for only the metal you use.

The continuous casting method improves the physical qualities of the Johnson alloy 72 (SAE 660). Internal and surface defects are eliminated and the distribution of lead and other elements is more uniform. This improves machinability, makes for longer tool life. You also get greater tensile, yield, impact and fatigue properties.

Johnson **CONTINUCAST** 105″ Bronze Bars are available in 21 sizes of solid bars from ½″ to 3″ in diameter, and in 118 sizes of tubular bars which range from ½″ to 2½″ ID and from 1″ to 3″ OD.

To get the benefit of greater economy and quality of **CONTINUCAST** bars ask your distributor to supply you. For further information write for folder JBL-14.

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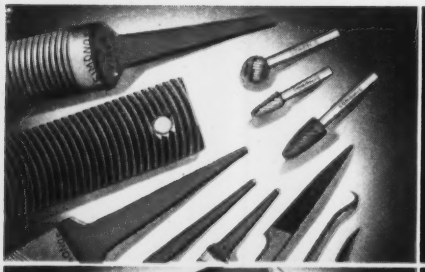
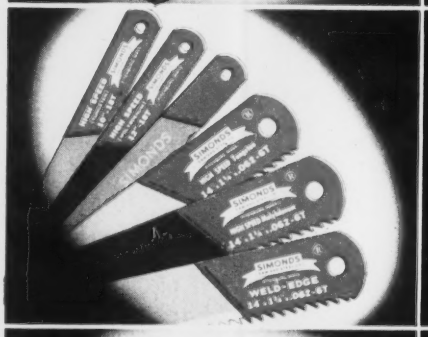


"RED TANG" FILES

Complete Line: American Pattern Files and Rasps . . . Swiss Pattern Files . . . Vixen Milled Curved-Tooth Files . . . Rotary Files and Carbide Burrs.

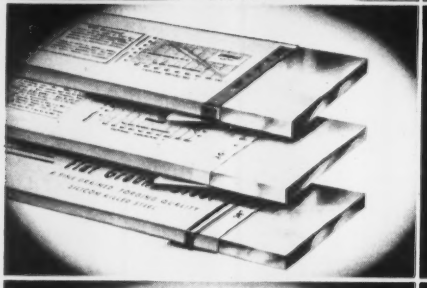
METAL CUTTING BAND SAWS

Hard Edge, High Speed Steel and Spring Temper. Standard, Skip, or Sabre Tooth. Furnished in all standard widths in coils or welded to length.



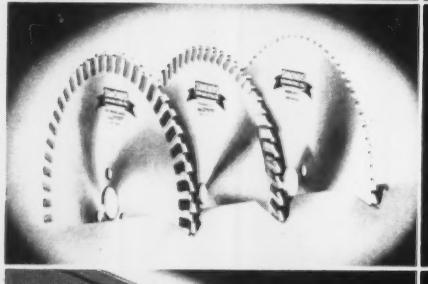
"RED END" HACKSAW BLADES

Power Blades: High Speed (Molybdenum), High Speed (Tungsten), and High Speed "Weld-Edge" (shatterproof). Hand Blades: Standard Steel, High-Speed (Molybdenum), and High Speed (Tungsten — Hard Edge or All-Hard).



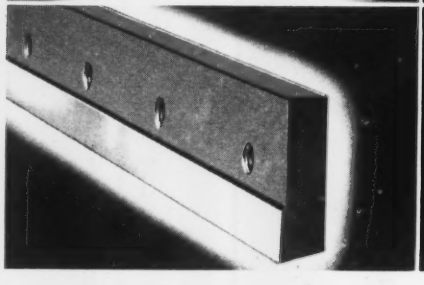
DIE STEELS

All 3 Types: Flat Ground Die Steel in either Oil or Air Hardening types. Also a new Low Carbon Flat Ground Steel for use where heat-treated steel is not needed (a fine grained, silicon killed steel).



CIRCULAR METAL CUTTING SAWS

Solid Tooth (including Hard Rim High Speed Steel), Inserted-Tooth and both types of Segmental Saws for cutting all metals, plastics and fibrous materials.



"TUNGSWELD" SHEAR BLADES

Single Edge Squaring Shears . . . unmatched in cutting sheet silicon, monel, and other stainless-type steels . . . unannealed sheets up to 16-gauge and annealed sheets up to 3/16" thick.

likes Victor Machine Torches and Tips

AND SO WILL YOU, because you get travel speeds from 0 to 180" per minute, forward or reverse, with Victor's Model VU-120 portable flame-cutting machine. It cuts straight lines, circles, square or bevel kerfs with remarkable accuracy. Wide speed range enables you to adapt travel carriage to many automatic welding applications, using either submerged or inert arc.

HERE IT'S SHOWN cutting with a **new** LPCG machine cutting torch and tip — one of a **new** series designed to give maximum efficiency with natural and propane preheat gases. Remember, Victor torches perform best when you use genuine Victor tips.

For the torches and tips that cut your costs, call your Victor dealer.

VICTOR for welding

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Mfrs. of welding & cutting equipment; high pressure and large volume gas regulators; hardfacing rods, blasting nozzles; cobalt & tungsten castings; straightline and shape cutting machines.

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LOOKING FOR MORE FROM

For steelcutting . . . trim costs with Carboloy® Extra-Performance Grades 330, 350, and 370, and low-cost, General-Purpose Carboloy 78 and 78B carbides

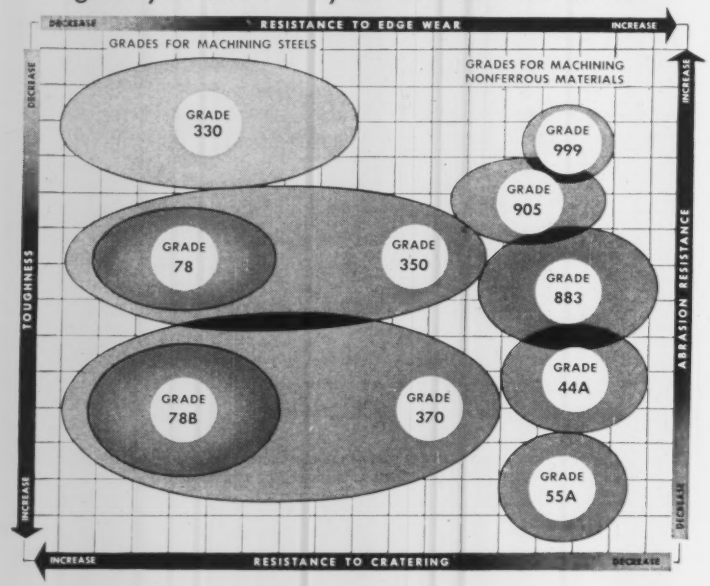
Some steelcutting jobs call for extra-tough, extra-performance carbides. Others can only be handled profitably with low-cost, general-purpose carbides. That's why we make them *both*.

Where you need increased machine productivity and have long production runs to keep cost-per-piece low—use Carboloy Extra-Performance Series 300 carbides. Their added strength and stamina handle jobs ranging from heavy roughing to high-speed finishing . . . at a unit cost and rate no "premium" carbide on the market can beat.

But, for general-purpose steelcutting jobs that don't require the Extra-Performance carbides, use Carboloy Grades 78 and 78B. Their top-notch performance, at low initial tool cost, will keep your machines operating profitably.

Chances are, your plant should be using *both* grades. Your local Authorized Distributor of Carboloy cemented carbides can deliver tools, blanks and inserts you need . . . in a hurry.

This complete team of Carboloy cemented carbides gives you more for your carbide tool dollar!



YOUR CARBIDE TOOL DOLLAR?

For nonferrous materials . . . boost production rates with Carboloy® cemented carbides performance-matched to your machining jobs

Aluminum, titanium, super alloys, wood—all have machining peculiarities that raise cain with production schedules and tool costs. That's why we make *five* job-tailored Carboloy cemented carbides for cutting these materials.

With these five grades (see chart, at left), you can get the one with exactly the right combination of shock resistance and wear resistance to match your job—whether heavy, interrupted cuts, or precision finishing.

Because you're using performance-matched carbides with consistent metallurgical quality, you can schedule heavier production loads . . . and you will get this increased output at lower tool-cost-per-piece.

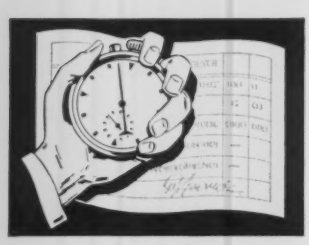
Your local Authorized Carboloy Distributor has complete stocks of tools, blanks, and inserts in these five grades. A phone call to him today will get your machines humming faster tomorrow.

For more information on Carboloy Extra-Performance and General-Purpose carbides, or nonferrous material carbides, write: Metallurgical Products Department of General Electric Company, 11141 E. 8 Mile Road, Detroit 32, Michigan.

CARBOLOY®
CEMENTED CARBIDES

GENERAL ELECTRIC

Faster Shearing at Follansbee



The addition of a big Steelweld Pivoted-Blade Shear in the Pittsburgh warehouse of Follansbee Metals, has greatly speeded the plate service they provide.

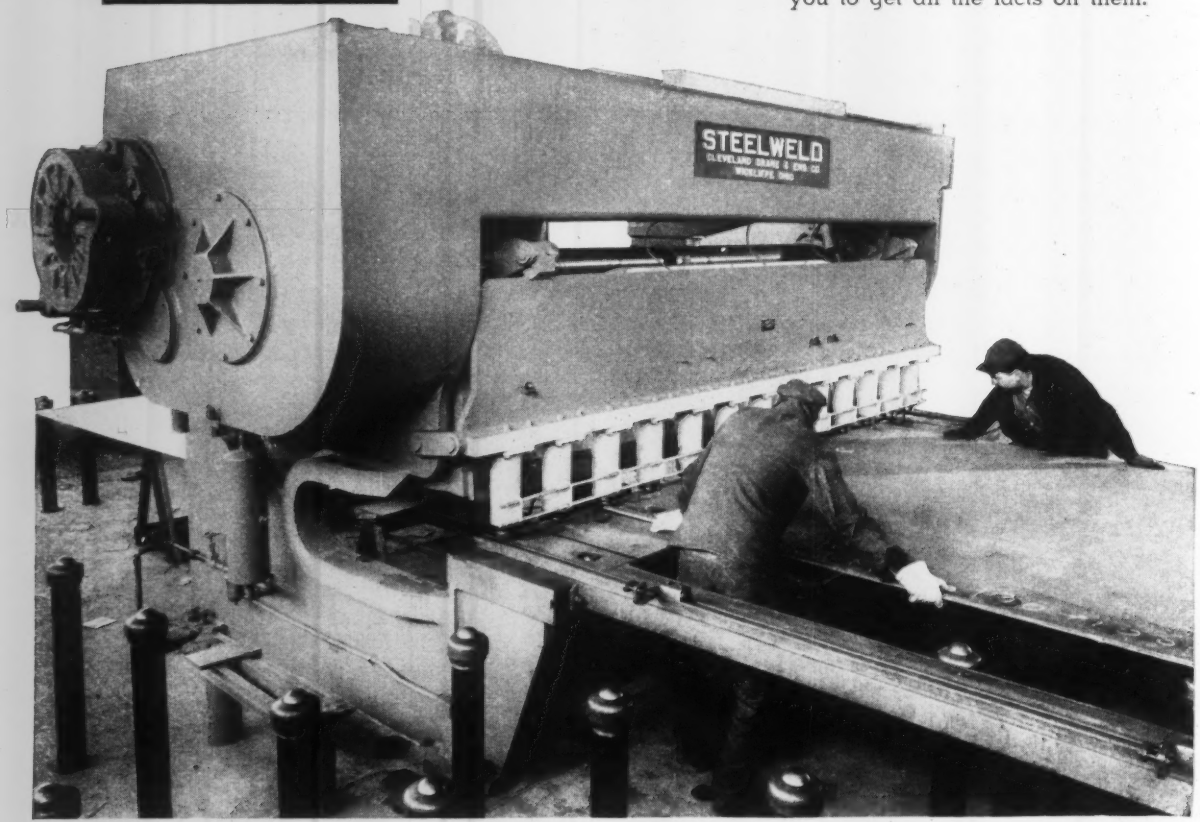
Hot rolled steel plates, stainless plates, floor plates and other metals are cut smoothly and accurately. The machine can handle mild steel up to 12'-0" x ¾". The 36" deep throat permits slitting plates 72" wide down the middle for any length.

Because of the Micro-Set knife adjustment, it is quick and easy to properly set the knife clearance to obtain the best possible cut for every thickness. No other shear has this outstanding feature.

It was only after a thorough study of all makes of shears that Follansbee decided upon Steelweld. And it has fully proven up to expectations.

It makes the cuts as desired in metals of various characteristics. It is fast and easy to operate. All parts are readily accessible and the many adjustments provided minimize and simplify maintenance.

Steelweld Shears are the very latest and most modern on the market today with a host of points of superiority. We urge you to get all the facts on them.



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CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

7845 East 282nd Street, Wickliffe, Ohio

STEELWELD PIVOTED BLADE SHEARS

Memo to a Man of "Parts"

The number of different parts made from Roebling High Carbon Specialties, Flat Wire and Spring Steel are close to countless.

Some things you can count on, though, are the consistent dimensional and mechanical uniformity you get with any Roebling High Carbon Specialty. They are the qualities that contribute to speeding *your* production and cutting *your* costs.

They are high qualities that make for high values. Next time you need flat wire or spring steel, specify Roebling. Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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Roebling... Your Product is Better for it

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CLEVELAND

KNUCKLE JOINT PRESSES

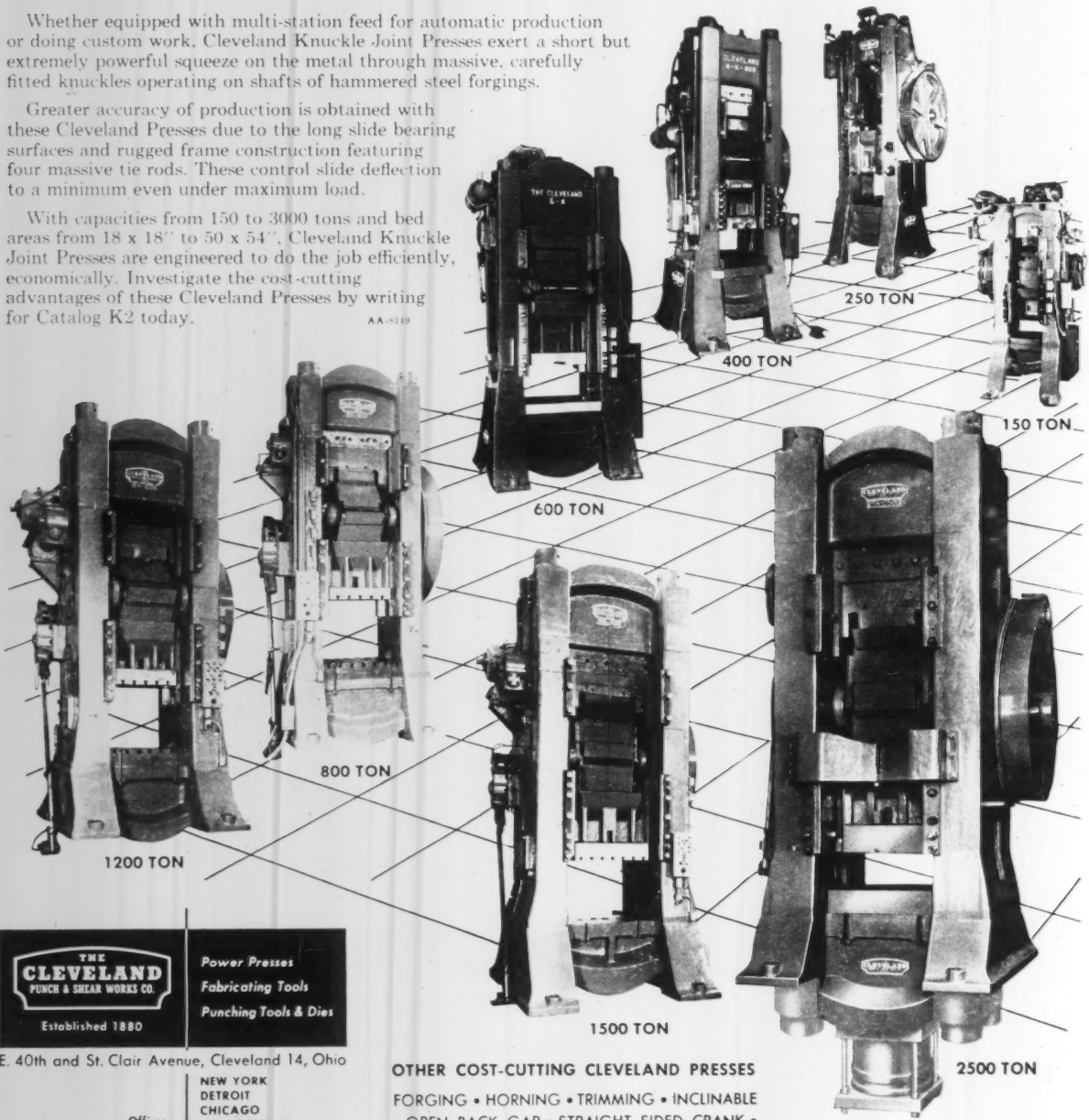
FOR AUTOMATIC FEEDS OR CUSTOM WORK

Whether equipped with multi-station feed for automatic production or doing custom work, Cleveland Knuckle Joint Presses exert a short but extremely powerful squeeze on the metal through massive, carefully fitted knuckles operating on shafts of hammered steel forgings.

Greater accuracy of production is obtained with these Cleveland Presses due to the long slide bearing surfaces and rugged frame construction featuring four massive tie rods. These control slide deflection to a minimum even under maximum load.

With capacities from 150 to 3000 tons and bed areas from 18 x 18" to 50 x 54", Cleveland Knuckle Joint Presses are engineered to do the job efficiently, economically. Investigate the cost-cutting advantages of these Cleveland Presses by writing for Catalog K2 today.

AA-5119



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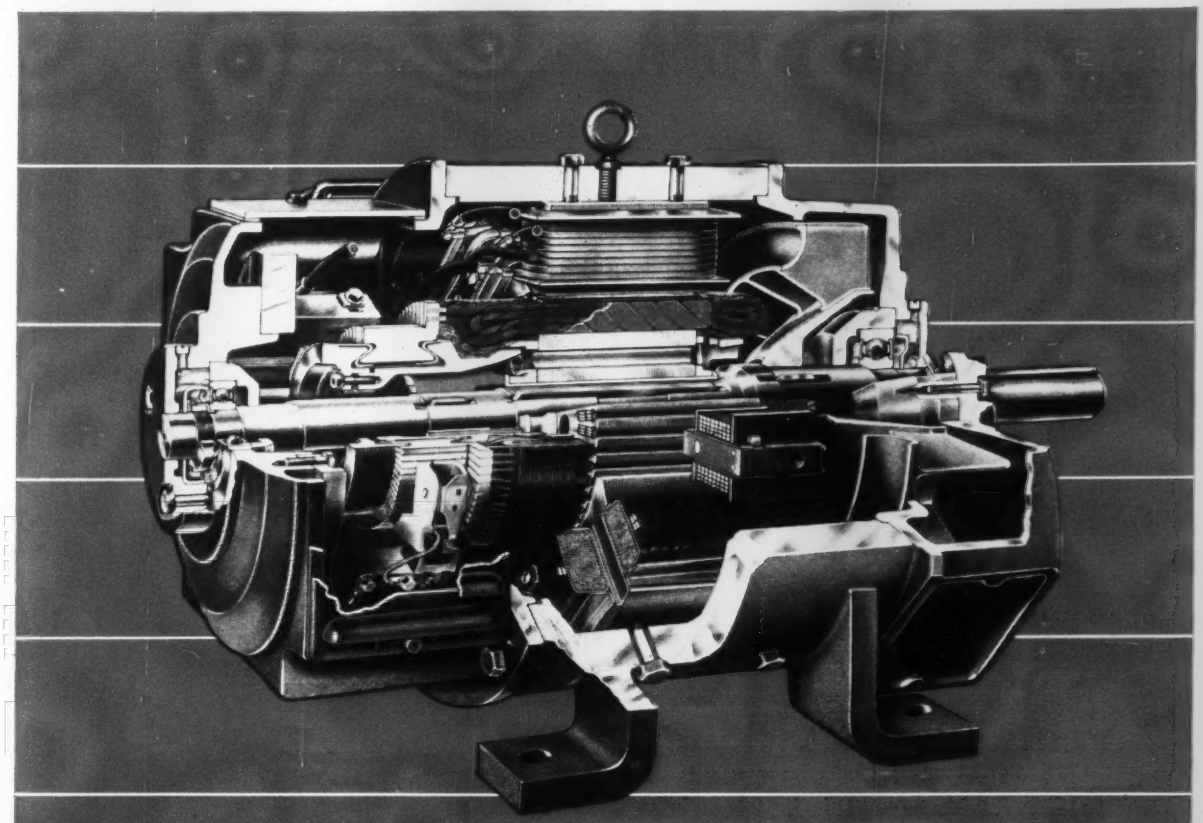

THE RELIANCE SUPER 'T'

A New Kind of D-c. Motor With DYNAMIC RESPONSE

Here is a motor built to make maximum use of d-c. flexibility. The Super 'T' puts Dynamic Response into starts, stops, and speed changes. Dynamic Response gives you a 50% increase in torque and a 50% decrease in reaction time.

This top performance is due to advanced balanced design. Lighter, small diameter armatures cut mechanical inertia 50%. Superior Class B insulation, gives extended life even at temperatures as great as 130°C.

Top grade insulation plus engineered ventilation lets the Super 'T' take tremendous overloads. In fact, the Super 'T' can develop double normal horsepower during starts, stops, and speed changes.

The Super 'T' is a compact power package, designed inside and out for tough industrial service. From appearance to performance, the Reliance Super 'T' with Dynamic Response is today's most modern industrial motor.

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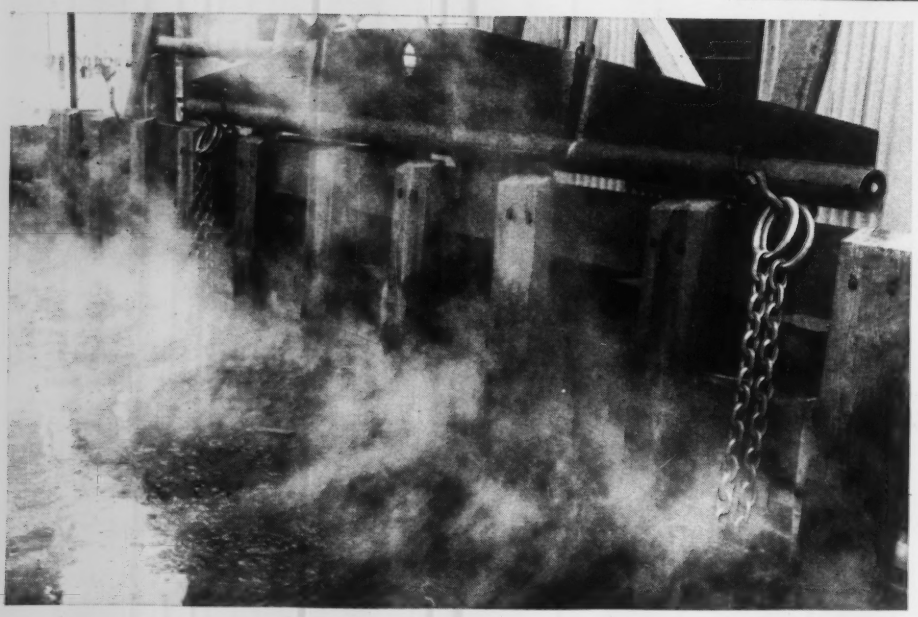

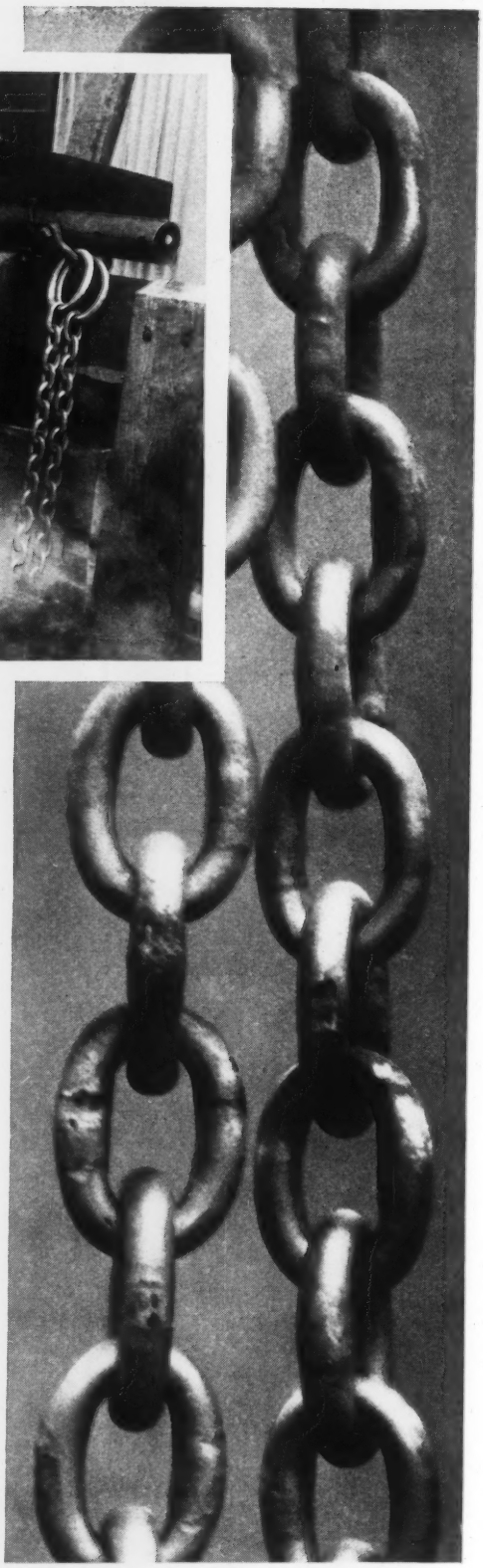

7 years on the pickling line Monel chains still have no "weak link"

They resist corrosion, retain high strength, ductility

Take a closer look at these ⅝-inch chains of Monel* nickel-copper alloy.

You'd never know that they've been handling two-ton loads five days a week, for seven years in a 5% sulfuric acid pickling solution at Hammond Iron Works, Bristol, Pennsylvania.

They look as good as new . . . have seven years pickling service behind them, *years of service ahead!*

Monel alloy a natural for pickling equipment

Exceptional corrosion resistance...high strength and ductility that lasts...these are the principal reasons why Monel alloy is a natural for pickling chains...for pickling hooks, slings, tie-rods and baskets, too.

Add up these advantages

1. The high strength of Monel alloy permits you to use lighter equipment to carry greater loads. It's the strongest non-ferrous metal you can use.

2. No need to allow for extra metal to offset corrosion. Monel alloy withstands sulfuric acid pickling solutions . . . outlasts other materials many times.

3. Equipment of Monel alloy is easily fabricated, easily repaired.

Get complete information

You'll find details about Monel pickling equipment in a 32-page booklet "Equipping the Pickle House for Greater Production at Lower Cost". For your copy, just write Inco. *Registered trademark

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INCO

INCO NICKEL ALLOYS

STEEL

November 10, 1958

Metalworking Outlook

Steelworkers Talk Strike

Listen carefully to the ominous sounds coming from district United Steelworker meetings. The theme: Get set for a possible strike in 1959. Al Whitehouse, a district director, told a Chicago conference that the industry "is going to take us on next year. We want more money—and we're going to fight and get it." Steel management's sentiment about the present contract is: The three-year pact, which expires next June 30, has proved too expensive, particularly the cost-of-living provision. Steelworkers are now the highest paid industrial hourly people in the world. Significance: A long steel strike is a distinct possibility next year.

Share Revenues If Struck?

A novel revenue-sharing plan by six major airlines merits your attention. Capital Airlines, Eastern Airlines, American Airlines, Pan American World Airways, Trans World Airlines, and United Air Lines last week asked the Civil Aeronautics Board to approve an agreement to share receipts they get from traffic that normally would have been handled by a struck airline. Comments one observer: "The idea may be worth playing with in some of the basic industries where you can quickly measure shifts in sales patterns. But even there it would be tough to administer, almost impossible anywhere else in industry."

Ohio Workers Win 7.09 Cents

Production workers in northeastern Ohio have won negotiated wage increases averaging 7.09 cents per hour thus far this year. The figure does not include fringe benefits and cost-of-living adjustments, says Associated Industries of Cleveland. The area is a bellwether because of its diverse industry.

AFL-CIO Tries To Rescue Carey

The AFL-CIO is trying to bail out James B. Carey, president of the International Union of Electrical Workers. He's foundering in negotiations on employee security with General Electric Co. and Westinghouse Electric Corp. Both companies have offered savings plans as counterproposals to IUE's demands for Supplemental Unemployment Benefits. The savings idea appears attractive to many of the union members; the three biggest GE locals have refused to vote Mr. Carey strike authority in his fight to win SUB. AFL-CIO President George Meany has just denounced the GE plan. Bargaining of two other AFL-CIO unions dealing with the companies—International Brotherhood of Electrical Workers and the International Association of Machinists—will be co-ordinated with the IUE's efforts.

How To Win Worker Support

Workers will go along with your change in method or procedure to increase productivity if three conditions are met, says Joseph A. Beirne, presi-

Technical Outlook—Page 117 Market Outlook—Page 165

dent of Communications Workers of America. The worker must be given an understanding of the new procedure. He must be shown how he'll share in the benefits of the change. He must keep a job with the company despite the change. "If the major portion of those elements are not met," warns Mr. Beirne, "you will find roadblocks in your way."

GNP To Hit $460 Billion in '59

We'll hit $460 billion in gross national product next year, economists at a University of Michigan conference believe. Gain over 1958: 4 to 5 per cent. Like the experts at the Pitt conference (Page 93), they think prices will rise in 1959, but only about 1 per cent. Corporate profits will rise sharply to $39 billion from a $32 billion annual rate in the second quarter this year. Gross domestic investment, including housing, inventory accumulation, plant and equipment, will jump to $58.3 billion next year from an annual rate of $54.5 billion in the third quarter. The Federal Reserve Board's index of industrial production will gain 10 points or more.

West Germany Passes U. S. as Toolbuilder

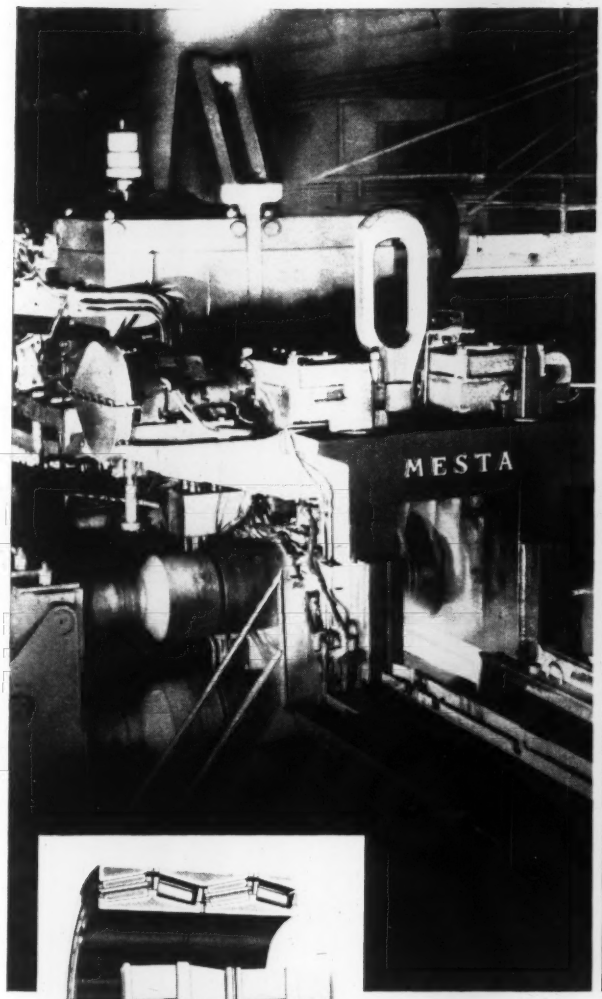
West Germany will pass us this year as the Free World's leading producer of machine tools, members of the National Machine Tool Builders Association heard last week. The Germans expect to turn out $420 million worth of tools in 1958. Their equipment sells at about two-thirds the U. S. price, so this equals some $630 million in our machine tools. We'll probably ship $480 million worth in 1958. Half the German tools are exported. "To enable U. S. builders to compete in world markets," STEEL's editor-in-chief, Irwin H. Such, warned the convention, "Washington will have to re-examine the tax and depreciation policy that stifles industry." One restriction on the industry is being eased today. New government rules will allow more American machine tools to be shipped to the Soviet bloc.

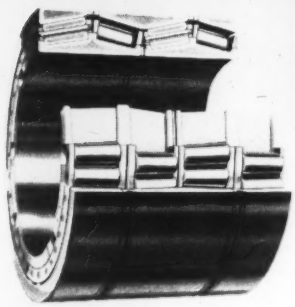
Literature Searching by Machine

Is machine searching of metallurgical literature feasible? Yes, says American Society of Metals. Test runs on an electronic searching selector have been successful. ASM hopes to establish a metals information center where all kinds of metallurgical literature will be abstracted and coded. Cost of the searching service will be borne by subscription or on an individual basis.

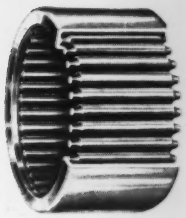
Straws in the Wind

Machinery Dealers National Association is starting an industry-wide inventory plan to facilitate the location and sales of used machine tools . . . Civilian employment is now 65.3 million, up 700,000 from September . . . Gear sales were up 5.3 per cent in September over August . . . Reaction Motors Div. of Thiokol Chemical Corp. has fired a prepackaged liquid rocket engine of 50,000 lb thrust, the largest of that type fired so far.





from
steel mills . . .



to
farm tractors

Torrington makes the right anti-friction bearing for every basic need!

. . . Huge Tapered Roller Bearings to handle severe radial and thrust loads in steel rolling mills. Or thin-section Needle Bearings to save space and weight and still provide the highest possible radial capacity.

Between these two examples lie all kinds of requirements. To meet the broad range of needs, Torrington makes every basic type of anti-friction bearings.

The Torrington Company, with this broad experience to draw on, has collaborated with industry in thousands of successful applications. Rely on your Torrington representative for help in developing the *right* anti-friction application for you. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

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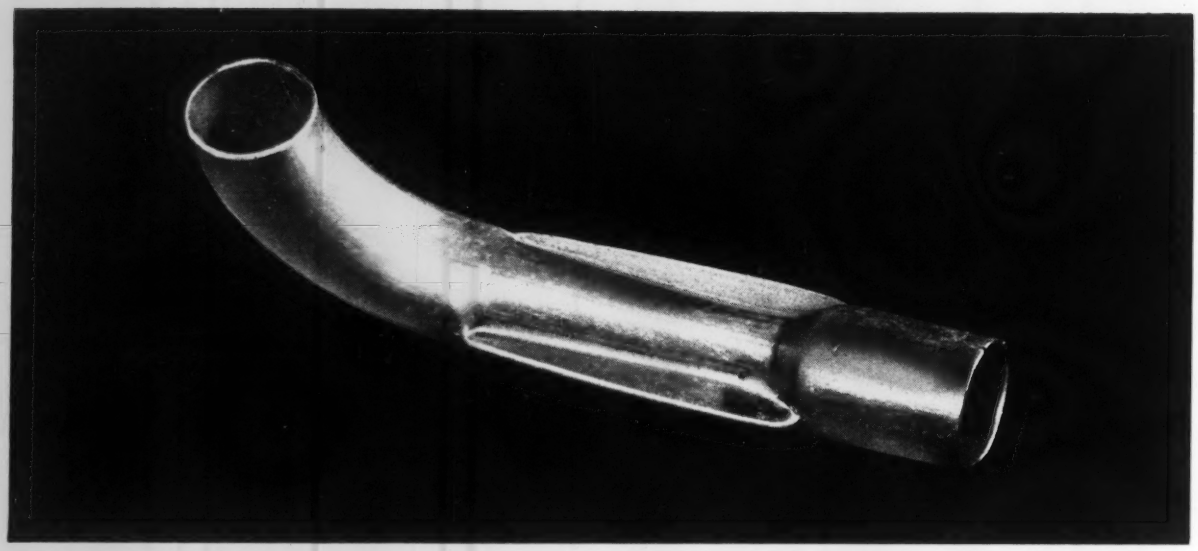


Armco ALUMINIZED STEEL Tubing Cuts Cost of Appliance Parts for Manufacturer

Venturi tubes for gas ranges made of Armco's hot-dip aluminum coated tubing provide resistance to heat and corrosion at less cost

Lincoln Brass Works, Inc., Detroit manufacturer of appliance components cut the cost of gas range venturi tubes by using Armco ALUMINIZED STEEL Type 1 Tubing instead of plated or ceramic coated steel tubing.

The company switched to Armco's special tubing after making a detailed engineering and cost analysis of materials acceptable to AGA for the application. Their tests showed that ALUMINIZED STEEL Tubing assured ample corrosion- and heat-resistance for dependable durability, and made possible appreciable cost reduction.

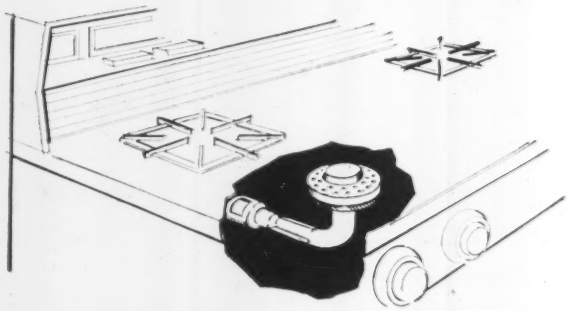
Offers Unique Advantages

Armco ALUMINIZED STEEL Type 1 Tubing gives you all the advantages of light weight tubular construction plus top resistance to a combination of heat and corrosion. Its special coating won't discolor up to 900 F, resists destructive scaling to about 1250 F.

Because of these advantages, unmatched by any other metal tubing in its price class, ALUMINIZED STEEL Type 1 Tubing is widely used for heating elements; truck, tractor and automobile exhaust systems; heat exchanger tubes; flash tubes and similar parts.

Give *your* products an edge on competition with the design-improving and cost-cutting possibilities of Armco ALUMINIZED STEEL Tubing. It's available in O.D.'s from $\frac{3}{8}$ to 3 inches, gages from 13 to 20, and special shapes.

For complete information on properties and available sizes, just fill out and mail the coupon.



New steels are born at Armco

ARMCO STEEL CORPORATION, 2518 Curtis St., Middletown, Ohio

Send me complete information on Armco ALUMINIZED STEEL Tubing. We are considering it for

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ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Can Soviets Overtake U. S.?

This year, the Soviets will make 60 million tons of steel. We will make 85 million tons.

They will make 140,000 metal cutting machine tools (vs. our 34,000) and 25,000 presses and forging machines (vs. our 7000).

They will make 122,000 passenger automobiles (vs. our 4.3 million) and 360,000 refrigerators (vs. our 3.1 million).

By 1960, the Soviets plan to produce 200,000 machine tools and 25,800 presses and forging machines annually. Automobile and refrigerator output will not be increased appreciably.

Our production of capital equipment and consumer hard goods in 1960 will depend upon how many we will be able to sell.

Those comparisons reveal Russia's strategy on the world's industrial front. Soviet planners tell the Russian people that a better way of life is ahead, but, actually they'll have to wait until the USSR builds an industrial machine that matches ours and achieves its political objectives abroad through economic aggression.

It will take some time for the USSR to catch up with the U. S. Its gross national product is about one-third of ours. Its industrial capacity is about half.

But the masters of Russia's controlled economy do not have to satisfy demand at home before they pursue their international objectives.

Russia can buy surpluses from underdeveloped nations at prices above world market levels. It can sell equipment and manufactured goods at bargain counter prices. It has dumped aluminum, tin, and platinum. It is selling machine tools at prices one-third to one-half under those of U. S. builders.

As the gap between American and Soviet industrial potentials gets narrower, we will have to make some profound decisions if we are to keep our free enterprise system alive.

We have been fighting communism on an ideological level, using our high standard of living as our first line of defense. But the day may come when we'll have to switch weapons—from autos and refrigerators to steel plants and machine tools.

Irwin H. Such

EDITOR-IN-CHIEF

MILWAUKEE WROT WASHERS

. . . now they're WASHED!

SINCE 1887

Quality-conscious production methods call for modern materials . . . even down to your nut-and-bolt assemblies. Now you can buy Milwaukee WASHED WASHERS to promote cleaner workmanship, cleaner product-assembly, and upgrade the morale of production workers through a thoughtful regard for personal cleanliness.

Today, all popular sizes of Milwaukee U. S. Standard and S.A.E. Washers, Rivet Burrs and Machinery Bushings are *washed* by a special process that removes all oil, graphite or other grime. In addition, this *Milwaukee Wrot Washer washing process includes rust resistant treatment.*

Since the introduction of this improved processing of Milwaukee Wrot Washers, Industry has responded with a most enthusiastic vote of approval. Many production orders *specify* "WASHED WASHERS" . . . but whether you specify "Washed" or not, that's the way they are supplied . . . clean washers for clean workmanship and clean workers . . . to match your highest production standards.

Specify "Milwaukee Wrot Washers" for better Quality Control.

plus . . .

Modern Packaging for Easier Identification

In keeping with a policy of "dressing up" the washers themselves, by our special washing process, they are now put up in convenient, attractive 1-lb. and 5-lb. packages for easier identification and handling.

Your No. 1 Source for Quality Washers

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THE WORLD'S LARGEST PRODUCER OF WASHERS

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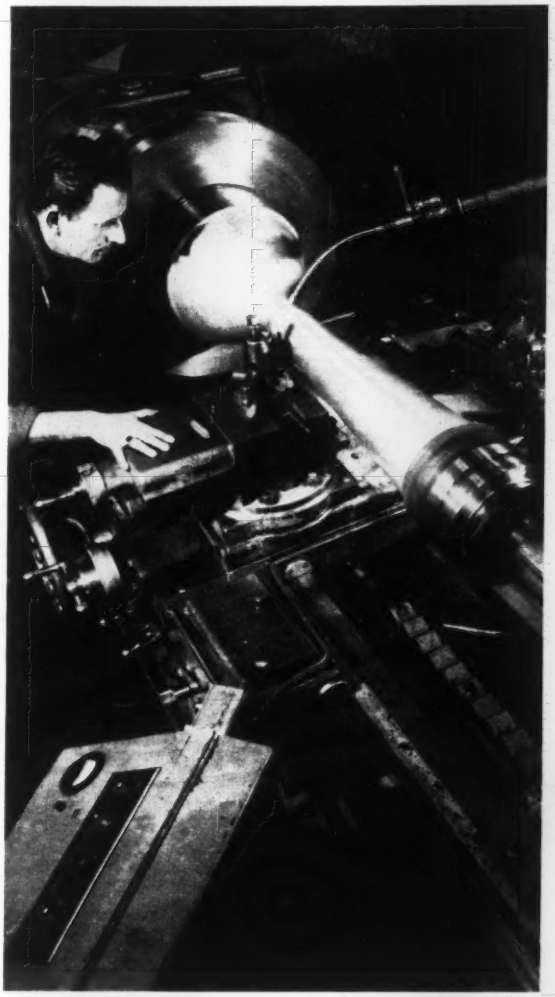


Monarch Machine Tool Co.

Equipment Makers Report Upturn

MACHINE TOOLS—Foreign competition is still a problem, but next year should see a continuation of the improvement already noted in the industry. Inquiries and new orders continue to increase.

CONSTRUCTION EQUIPMENT—Prices are going up. Builders tend to think business will improve a lot in 1959's first half. They expect the next three years to all be peak periods for the industry. Highways should help.

MILL EQUIPMENT—No boom is expected in the near future because of present overcapacity. But steady growth is indicated by the upturn already felt and "substantial increases are expected" through the next few years.

HEAVY ELECTRICAL EQUIPMENT—Orders are still slow. Shipments are under first half levels. But builders are looking to 1959 with optimism. They expect business to be around 30 per cent better next year, see a boom in 1960.

MATERIAL HANDLING EQUIPMENT—Business climate is improving rapidly. Orders are still spotty, and price resistance is strong. Customers are shopping for prices, but they plan to buy. Next year should see a 20 per cent improvement.

INDUSTRIAL FURNACES—New orders are coming in at a rapid clip. Inquiries are increasing. Builders believe 1958 will be good without reaching "peak year status." Next summer should see the beginning of the boom.

FOUNDRY EQUIPMENT—This field is hurting. Foundries aren't buying equipment, and suppliers are pessimistic about the next couple of years. Some improvement is expected by the third quarter of 1959.

WELDING EQUIPMENT—New orders in the second half are showing definite improvement over first half figures; 1959 will be fair; boom will come in 1960.

Capital Equipment Edges Up

MANUFACTURERS of capital equipment expect 1959 to be substantially better than 1958, but they're not expecting a boom before 1960.

Capital goods people questioned by STEEL are a long way from being unanimous in their predictions for next year. One equipment maker says the splurge has already started. Others don't expect it until around 1963. But almost all agreed that the recession is over. The questions now: How long will recovery take? How far will it go?

• **Prices and Sales**—A number of respondents think that "hard sell" is the answer to complete recovery. Price cutting is not widespread. An industrial furnace builder explains: "Most pieces of capital equipment are so expensive that price paring becomes picayunish. Customers are more worried about service and delivery."

Most makers believe that harder selling alone won't do much good. "We're dependent on the ups and downs of other industries. When they're ready to buy, we can sell them. When they're not, no amount of pressure can convince a company's top management it ought to appropriate several thousand dollars for new equipment."

But users of capital equipment are receptive to the argument that they can't afford not to modernize. One company's advertising sums up

the feeling of several equipment customers: "The company that needs new equipment is already paying for it."

When pinned down, most producers of capital equipment agreed that the next boom will come as soon as production capacity becomes strained. And they don't expect that to happen before 1960.

• **Blueprint** — Here's what equipment makers expect in the next decade: Next year will be better than 1958, and 1960 will be still better. They expect more gains in 1961, then a drop in 1962 (back to around 1960 levels). The next eight years will be characterized by unspectacular but steady growth.

Here's a rundown of how the different segments of the industry are faring:

• **Machine Tools** — Second half shipments are about at first half level. But most companies report that new orders are showing definite improvement.

Walter Bailey, president, Warner & Swasey Co., Cleveland, says new orders are running about 50 per cent ahead of first half figures. He expects the first six months of 1959 to be at least 50 per cent better than the first period of 1958.

Another midwestern builder says: "I'm hopeful about next year, but I really don't know why except that we're getting a lot of inquiries. If we don't get a boom started this year (1959), we'll have to wait until carbuilders make decisions on 1961 models."

Edgar L. McFerren, vice president, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., says his firm expects 1959 new orders to be "some better, but we're not looking for great increases."

Something else is worrying machine tool builders. As one put it: "We're beginning to wonder if there ever will be another boom. It looks like our government intends to transfer the machine tool business to Europe as one of the bundles in the good neighbor policy."

• **Construction Equipment**—Makers are optimistic. Sales are running well ahead of first half levels for most manufacturers. Even those who report a seasonal drop this fall say that sales are "unusually strong for November."

An official at Cleveland Trencher Co. says his firm's sales "have gained steadily since June. We are expecting an increase in business next spring which should put first half '59 above first half of this year."

A spokesman for another midwestern builder expressed the industry's consensus: "We think that new orders and shipments will pick up well in next year's first six months. We expect that period to be better than the corresponding period this year, and we think the next three years will all be peak periods for construction equipment.

"We believe appropriations for highwaywork under the government's building program will increase 15 per cent next year. Miners have been slow in buying this year, but they should pick up in 1959."

One significant note: Price increases of 3 to 6 per cent are spreading through the industry.

• **Mill Equipment** — Second half shipments are considerably below the first half's (a 30 per cent drop seems to be typical), but new orders are coming in faster than they were. Makers don't expect a boom in the near future, a feeling they attribute to their customers' overcapacity. But they do expect "substantial increases in 1959 and a steady growth from that point on."

Price doesn't seem to be a factor to customers. An interesting point is expressed by a Pittsburgh builder: "We're not getting any more new orders this half, but the ones we're receiving are considerably larger than they have been."

• **Heavy Electrical**—Orders are still hard to get. Shipments are lower this half than last. But makers are optimistic about next year.

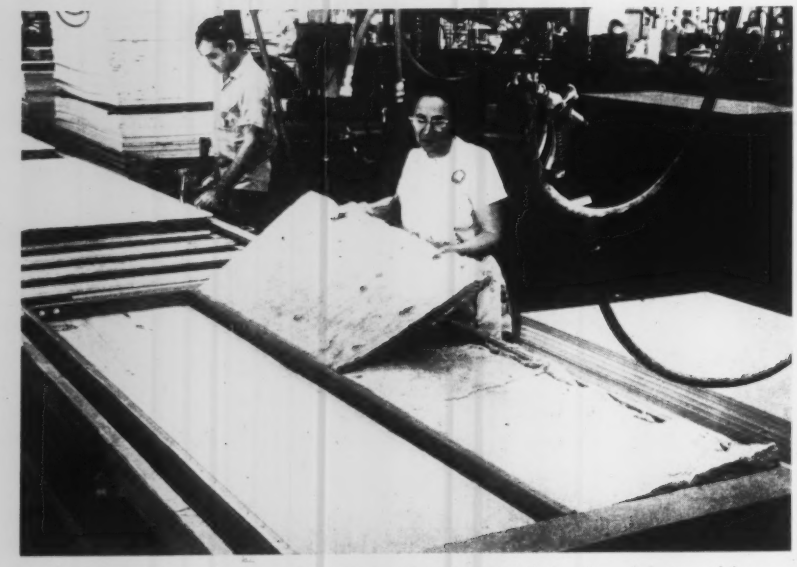
One builder says he expects new orders to be 30 per cent better in 1959. He expects the splurge to start in 1960, with the swing starting in next year's final quarter.

Most makers agree that business will peak around 1967.

• **Welding Equipment**—Shipments in the second half will about equal those in the first half. New orders are considerably better (as much as 25 per cent).

Companies expect 1959 to be good, but they don't look for the big move until 1960. One Ohio builder said: "So many of our customers have excess capacity that they could handle a nice boom without buying new equipment."

• **Handling Equipment**—"Although new orders are still spotty, the general climate is definitely better than it was a year ago. We were pessimistic, then. We're optimistic



STEEL FRAMED PANELS FOR U.S. STEEL HOMES' 1959 line of prefabricated houses are shown being assembled at the division's Albany, N. Y., plant. Featuring steel framing, roof trusses, and individual components, the new line will begin arriving at builder-dealers about Dec. 15

now." That's the way one maker describes the industry's feeling, and he seems to be typical.

Builders can see an upturn. It's already resulting in new orders, but they don't expect the real move to come before mid-1959. Inquiries are coming in faster than they were.

One cloud in sight: Price resistance is strong, and buyers are shopping. One industrialist deplores it, but says: "We brought it on ourselves with price cutting."

Consensus: 1959 will be about 20 per cent better than 1958.

• **Industrial Furnaces** — Shipments have been slow, but new orders are coming in fast. Salem-Brosius Inc. has received $4 million in new orders in recent weeks.

An Ohio builder says orders and inquiries have shown a significant increase. He expects business to continue a slow rise until summer, then speed up.

Most builders expect 1959 to be better than 1958 without reaching the status of a "peak year."

• **Foundry Equipment**—Executives in this field are more pessimistic than their colleagues in any other segment of the industry. Backlogs are practically nonexistent. Orders are off about 30 per cent. Reason: Foundries have been badly hurt by the recession and still aren't able to buy (or at least won't buy).

Little improvement is expected before the third quarter of 1959. After that, growth is expected to be gradual.

Research Addition Finished

A four story, $1.2 million addition to the Armour Research Foundation of Illinois Institute of Technology, Chicago, has been completed.

The addition, more than doubling the space for metal projects, will house administrative offices and research sections.

Tantalum Supply Ample

Demands for tantalum can now be met, says the Department of Commerce. In the last two years, the industry has grown from one plant to seven firms with about ten plants producing 400,000 to 500,000 lb of powder annually.

Five Crushing Defeats Halt Right-To-Work Movement

LOOK FOR states to shelve plans for right-to-work referendums—at least until the rout of Nov. 4, 1958, is forgotten.

Of six states voting on the issue last Tuesday, only agrarian Kansas approved it. Ohio, California, Washington, Colorado, and Idaho turned it down.

Had Ohio or California voters adopted the law to ban the union shop, it would have stood a good chance of appearing on ballots in highly industrialized states like Illinois, Pennsylvania, and West Virginia. Of 19 states (including Kansas) that now have right-to-work laws, only Indiana is substantially industrialized.

• **Why It Lost**—Ohio was the crucial test. About three out of five Ohioans voted against it. Here's why:

1. **Organized labor** poured huge sums of money into publicity. Ohioans were besieged by television announcers shouting that right-to-work would mean no more vacation pay, lower wages, curtailment of pensions, and other blows to the workingman and his family. Posters, brochures, and handbills screamed "Vote no on issue 2." Farmers, housewives, Negroes, elderly people, and the corner grocer were told that the law would hurt them.

2. **Ohioans for Right to Work Inc.**, the core of the backing for the issue, had a lean time financially and had to concentrate its publicity in the final two weeks of the campaign. Big Labor started its push in early September.

3. **Few big companies** in Ohio boarded the bandwagon. Some honestly like the union shop. They say it pins the responsibility for walkouts on the union and contributes to labor stability. One industrial relations director says he would rather bargain with one authoritative group than with a mass of individuals.

4. **The Democratic sweep** across the nation helped swamp the issue. A veteran Cleveland political observer contends: "The defeat of the right-to-work law was part and parcel of the Democratic victory. The issue and the candidates rode in on one another's coattails. The cause was the public's disgust with Republican disunity."

5. **Workers turned out** in droves to vote down the proposed law. Observers believe it was a record turnout by union members in a nonpresidential election year.

6. **Rural areas failed** to back the proposal as strongly as proponents had anticipated. They expected the industrial areas of Cleveland and Youngstown to give opponents a big edge but had hoped to make it up in downstate regions. They say labor publicity aimed at farmers and housewives turned the tide.

• **The Future**—For the foreseeable future, the right-to-work movement is dead. Even those states that have the laws are wondering if they'll be able to keep them. They're afraid the new Congress may repeal the section of the Taft-Hartley law that allows states to adopt right-to-work measures.

THESE FUTURISTIC LIGHT POLES, made by Union Metal Mfg. Co., Canton, Ohio, have radio receivers built into their bases for electronic light control

Want foreign competition relief? U. S. tells procedure in . . .

New Import Rules Coming

IS YOUR INDUSTRY being damaged by imports? If you seek to control them through Section 8 of the Trade Agreements Act, which refers to the effects of imports upon national security, you'll have to follow some new rules laid down by the Office of Civil & Defense Mobilization.

• **To Be Published Soon**—OCDM is drafting the detailed procedure to be followed in seeking relief under the new four-year extension of the trade act passed by Congress this year. Up until now, industries have not known exactly how to present their cases. Under the new law, OCDM is required to publish detailed directions.

In one sense, the rules will tend to frighten off industries which don't have much to back up their contentions but in the past have taken up the agency's time with demands for investigation, says an OCDM official. On the other hand, the new rules may make it easier for an industry to get quicker action, because it will know exactly what evidence it must present.

Under the proposed regulations, an investigation may be instituted by the head of any government department or agency, including Leo Hoegh, OCDM director, or upon application of the injured industry.

• **Effects of Imports**—OCDM will take into account the following criteria when studying the effects of imports on national security: 1. Domestic production needed for national defense. 2. Domestic capacity available, including stockpiles, based on manpower requirements, raw material supply, and the nature of the product. 3. The industry's growth requirements, in terms of investment and exploration needs to meet defense requirements. 4. The effects of imports on domestic capacity. 5. The over-all economic effect on the nation, including substantial unemployment, loss of tax revenues to the government, and loss of manpower skills and investment.

• **How To Apply**—Over a dozen copies of the application will probably be required, and will include: 1. Identity of the applicant. 2. Description of the product. 3. Description of the applicant and industry (including companies, plants, locations, output, and capacity to produce). 4. Statistics on values and amounts produced domestically, imported, and exported. 5. Description of the competition created by imports.

Additional information may be required on employment, skills, investment, tax revenues, product uses, defense contract, proposed capital outlays and their purpose, sales, prices, profits, inventories, and wages.

• **Investigation** — OCDM will announce receipt of such an application and give interested parties time (probably 30 days) to comment. In co-operation with other government agencies, OCDM may seek further information or hold public hearings and question witnesses.

The regulations allow Mr. Hoegh to dispense with the procedures in case of a national emergency.

J. Roy Price, assistant director, resources and production, OCDM, has warned that imports cannot be used as the "whipping boy" for an industry's domestic troubles under the new law. Presumably, OCDM, under State Department influence, will administer it with the welfare of our international interests in mind. Mr. Price voiced his warning at a meeting of the American Tariff League.

Don't Forget To File Your Welfare Plan

Disclosure act effective Jan. 1 covers management, labor funds. Here's what to do and when

THE WELFARE & PENSION Disclosure Act, passed by Congress this year in an attempt to guard against misuse of funds by either management or labor, goes into effect Jan. 1.

• **Your Responsibilities**—The act requires you to: 1. Make a description of the plan and its latest annual report available to its participants and beneficiaries. 2. Be prepared to mail the description and a summary of the annual report to any participant or beneficiary who requests it in writing. 3. File two copies of the plan and the annual report with the Labor Department.

The department is preparing forms to be used to describe the plans, but you will have to request copies of them.

• **How Soon?** — All plans descriptions must be published by Apr. 1: annual reports within 120 days after the close of the fiscal year. But if your plans operate on a calendar

year basis ending Dec. 31, you need not publish annual reports until Apr. 29, 1960, says the Labor Department.

• **Plans Covered**—Included are employer, employee, and employer-employee plans providing medical, surgical, or hospital care or benefits, or sickness, accident, disability, death, or unemployment benefits, through the purchase of insurance or otherwise, including profit sharing plans providing retirement benefits.

Exceptions: Plans for 25 employees or less, those administered by governments, those run solely to meet the requirements of workmen's compensation or unemployment compensation disability laws, and plans administered by fraternal organizations as a corollary to membership.

Stresses Standards

This warning was given at the seventh annual meeting of the Standards Engineers Society at Philadelphia:

The U. S. will become a second rate nation unless its technical men and industrial management raise standards to provide nearly 100 per cent reliability for today's tools and equipment.

"Failure of parts in modern, complex apparatus costs the country $20 billion a year," stated H. Thomas Hallowell Jr., president, American Standards Society. Manufacturers must tell suppliers what is needed to produce trouble-free equipment, he added.

The materials needed to meet space age demands are not available. So we must rapidly improve the metallurgical structure and properties of available materials, said F. N. Hudson, chief of Materials & Engineering Branch, Standardization Division, Headquarters Air Research & Development Command, Andrews Air Force Base, Md.

"In light of current urgent demands on engineering departments," commented A. F. Gagne Jr., consulting engineer, "standardization techniques should be used to reduce waste and inefficiency."

The SES has started a research and education program of professional preparation for standards engineering.

GLS Has New Steel Series

Great Lakes' new carbon steel alloy has columbium added to increase ductility and toughness. Low carbon and magnesium content improves weldability

STRONGER carbon steels with fine grain structure are now being produced by Great Lakes Steel Corp., Detroit, a National Steel Corp. division. Called GLX-W, the four series line offers better fatigue and strength characteristics than mild carbon steels and is less expensive than high strength, low alloy steels, say company officials.

W. D. MacDonnell, GLS president, explains the advantage of designing for the midrange alloy group this way: Cost reductions of up to 35 per cent are made possible through weight savings and lower base prices when comparison is made with high strength, low alloy steels. He adds that the new line is a step toward replacing higher priced light materials (like aluminum) that are used in many products.

The GLX-W series is in the basic composition range of SAE 1015-1020, but it's treated with varying amounts of columbium to gain greater ductility and toughness. Yield strengths range from 45,000 to 60,000 psi. Clarence Altenburger, technical assistant to the president, says grain structure and fatigue properties make the steels a good choice for structural parts in road building equipment and trucktrailers. They're also good materials for pressure vessels and automotive parts (like brackets and rods) which are now made of more expensive high strength alloy steels. Their low carbon and manganese content improves weldability without excessive cracking under the bead.

• **Outlook**—The company has two orders (total, 35 tons) scheduled for delivery around Dec. 1. It also has a handful of inquiries and tentative orders for smaller amounts for experimental purposes. "I think we can conservatively look forward to turning out 50,000 tons monthly," predicts Mr. Altenburger.

Initial production will be in hot-rolled plates, sheets, and bars. Great Lakes probably will turn out cold-rolled products later. Thickness ranges from 0.074 in. (sheets) to ¾ in. (plates). Maximum width is 84 in.

GLS bar mills can turn out 4 in. round or square bars.

The division won't replace any present product lines with the new series. Ultimately, Weirton Steel Co., another National Steel subsidiary, will produce GLX-W in galvanized sheets, thinner gages, and in structural and coil sizes that are not made by the Detroit mill.

Great Lakes Steel's GLX-W Alloy Prices

(Per hundred lb)

	45W	50W	55W	60W
HR plates	$5.85	$6.00	$6.35	$6.70
HR sheets	6.00	6.15	6.50	6.85
HR bars	6.575	6.725	7.075	7.425

OIC's Roger Bremer (left) and Wayne Young discuss "task force" selling results

Big Company Methods Spur Small Firm's Growth

LAST MONTH, the Atomic Energy Commission awarded Ohio Injector Co., Wadsworth, Ohio, a sizable contract to develop a control device for sodium coolants in atomic reactors.

It climaxed a planned rejuvenation program for the 75-year-old valvemaker. Other results of the rebirth: OIC's 1958 sales will nearly equal 1957's, while industry volume is down about 20 per cent. The firm has reduced its inventory by $1 million while achieving better balanced stocks. It has won major long term contracts from large users it never before supplied.

• **Plan of Attack**—OIC learns customers' requirements several months in advance of normal ordering dates (through a new market research program and a "task force" selling technique explained below). By consolidating users' projections, it can schedule long production runs and stock finished items for quick delivery. It doesn't have to fret about obsolescence since it is stocking for known requirements.

Long production runs will allow greater mechanization and "even some automation," the company believes. A chain reaction is expected: Costs will be lowered, allowing attractive prices without sacrificing quality. Sales will rise, and the firm will be able to realize good profits on specialized (and highly competitive) industrial valves. OIC can double production without expanding facilities by adding extra shifts.

Wayne Young, president of the family owned firm, started to think in those terms back in 1956. But how do you implement such a program in a conservative company that has an unimpressive 6 per cent of the industry's market—especially when it builds over 5000 different items plus numerous special products? Here's what Mr. Young did:

• **Step One**—He first developed a management team to execute the rejuvenation program. To quarterback (as executive vice president), he hired 40-year-old Roger Bremer, a product development vice president for Studebaker-Packard Corp., who had been a purchasing executive for Ford Motor Co.

New talent was fitted into slots in each problem area. OIC didn't demand valve experience. It wanted "professional managers," as Mr. Bremer puts it. Recruits had to understand and help develop OIC's "era of professional purchasing" concept, which Mr. Bremer defines as: "Fully understanding customer needs and directing your engineering efforts to develop products that will better fill customer requirements at lower cost." It's like serving on the customer's new product development and cost control committees.

• **Next Step**—OIC's managers spent most of 1957 laying the foundation for the growth plan. They improved production scheduling, set up a merit rating plan for supervisors, revised salesmen's compensation, developed new budgetary methods, cut costs by $250,000 annually, added an IBM installation, and overhauled the employee relations program. In January, 1958, management outlined its plan to employees.

• **New Sales Technique**—The program really started rolling at this stage. OIC captured a major contract from one of the world's biggest valve users via its new "task force" selling technique. It works this way:

OIC's market research locates firms with big valve requirements. A five-man team—top marketeer, controller, manufacturing director, production control man, and engi-

neer—meets with the user's purchasing executives. The task force tells the potential customer: "We believe we can furnish all your valve requirements at a lower cost than you can find elsewhere, if you'll tell us how many of each kind you'll need for a given period (time varies)."

Members of the task force are called upon to document the offer. The production control man explains the mechanics of scheduling; the engineer discusses quality, testing, specifications; the manufacturing director evaluates the implications of the production load, tells how he would package the products and carry out engineering's guarantee, and answers other questions; the controller can furnish on-the-spot cost figures. OIC promises one price to meet the customer's minimum requirements, other prices at higher levels. The customer is told that he can use OIC as a warehouse for rapid delivery.

OIC distributors also serve as points for quick procurement.

• **Payoff**—Does the task force plan work? Mr. Bremer gives a resounding "yes." It has led to big orders from new customers, and has pushed OIC into new markets. It sold the AEC on OIC's ability to make the control device. It got the orders for all the valves to be used on 14 missile launching subs the U. S. will build. And OIC is supplying the valves for the *N. S. Savannah*. Industrial construction is an expanding market for the firm.

Mr. Bremer explains the philosophy behind the technique: "We think the day is past when taking a purchasing agent to dinner secures an order. Our task force approach provides him with complete knowledge of our capabilities and shows him how we can provide high quality economically through our long range plan."

Construction Activity Up

Construction showed better than seasonal strength in October, equaling the record $4.8 billion spent in August and September. Outlays for the first ten months came to $41.1 billion, up 2 per cent from 1957, report the Departments of Labor and Commerce.

GE Starts Atom Power Push

Sale of nuclear plants would build private industry's participation in power development, General Electric reports. It has its sights on a potential $590-million market

A SHORTCUT to competitively priced atomic power—that's the aim of a massive drive by General Electric Co.

At stake are atomic power equipment sales which could exceed $590 million by 1970.

Other major reactor builders include Westinghouse Electric Corp., Babcock & Wilcox Co., Combustion Engineering Inc., and North American Aviation Corp.

• **Three-Part Plan**—Here's how GE intends to win a big share of a $590-million market: The aim of its "Operation Knowhow" is to sell 50 small, prepackaged nuclear powerplants to private utility companies. GE is ready to build half of them, at a cost of more than $100 million. Other manufacturers will supply the balance. Primary purpose of the plants: To train technicians.

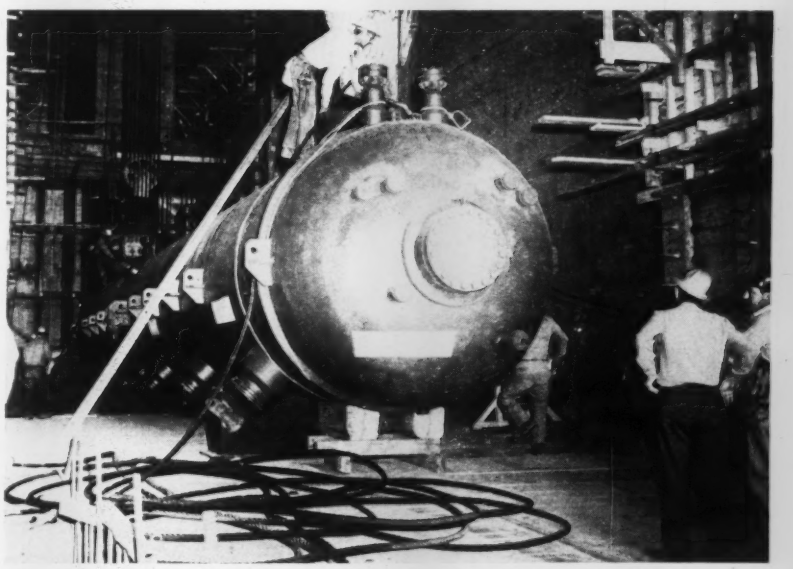
A second GE project, "Operation Sunrise," has this goal: The sale of at least four medium-size atomic plants to private utilities by 1962. Total cost will be about $90 million. Capacities would range from 25,000 to 100,000 kw.

Between 1962 and 1970, GE wants to build six "very large plants" at a cost of at least $400 million. By 1970, it believes plants of 450,000 kw could be built.

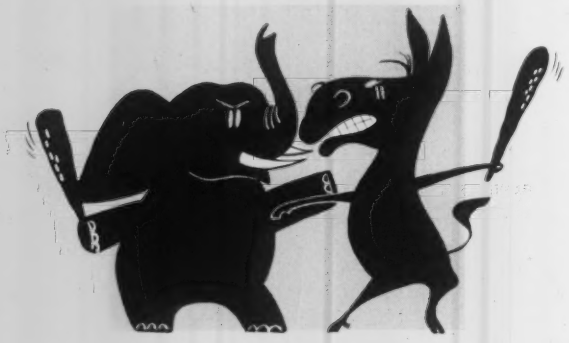
• **Benefits**—GE points out that its program gives utilities the opportunity to build private industry's role in development of atomic power. It believes that by concentrating on a single type of reactor (boiling water) we can speed up the attainment of an economic power source.

To reach its ultimate objective, GE must cross two hurdles. Some utilities and reactor builders suggest that research may show that other types of reactors are superior. Also, the utility industry traditionally prefers to have two or more suppliers for each item.

Despite those qualifications, GE spokesmen say first reaction from utilities is promising.



THIS 180-TON STEAM DRUM is being readied for installation in Commonwealth Edison Co.'s Dresden Nuclear Power Station near Morris, Ill. It's the country's first full scale, privately financed atomic powerplant. The drum will remove water from steam coming from the atomic reactor



Two Individualists Buck Trend

A MILLIONAIRE and an outspoken foe of unionism came home for the Republicans last Tuesday, and that was about all. If you have been listening to the pleas of the U. S. Chamber of Commerce and the National Association of Manufacturers to take a greater interest in politics, then you better paste this reminder in your electioneering handbook: Democrats can win in U. S. politics because they are Democrats; but for Republicans to win, they usually have to be outstanding individuals. Nelson Rockefeller consistently avoided walking the party line in his campaign; Barry Goldwater of Arizona ran better than expected and in the opposite direction from the "New Republicanism" team Ike thought he had built.

For Republicans, Rockefeller may be the magic name in the sixties, as FDR was for Democrats in the thirties and forties. Senator Goldwater, significantly from the political region growing the fastest in the U. S., could challenge him.

The man who lost last Tuesday's election wasn't even a candidate. Political historians may say Mr. Rockefeller ran better against Vice President Nixon's aspirations for the Presidential nomination in 1960 than he did against Gov. Averill Harriman. Certainly, the Democratic sweep in California, the vice president's home state, must be regarded as a personal defeat.

Republican Hopes for '60 Sink

Can anyone but Nelson Rockefeller carry the Republican standard in 1960? That is the question party strategists will be asking themselves right up to convention time. Although there will be the usual power struggle for the nomination, Republicans who put victory ahead of party politics will not allow Mr. Rockefeller to be forgotten. It is also possible that no other Republican will be ready to risk his political future in a battle that already seems destined to be won by the Democrats. For example, Sen. Bill Knowland of California, who is only 50, may be willing to wait for the pendulum to swing back by 1964.

The most significant thing about the election: The Republican candidate in 1960 will have to deal with a Senate controlled by the Democrats. The sweep of Democratic senatorial candidates last Tuesday means that they will also control the Senate of 1961-62, because enough southerners come up for re-election in 1960 to assure it—even if all the northern Democratic candidates are defeated (which is highly unlikely).

High on the list of Republican senatorial strategists for the last six years have been men like Purtell (Conn.), Potter (Mich.), Thye (Minn.), and Watkins (Utah). They were defeated, as were some other stalwarts like Malone (Nev.) and Bricker (Ohio). Only Goldwater, Williams (Del.), and Beall (Md.), among the Republican leaders, were strong enough to resist the Democratic tide.

On the House side, you'll miss men like Seely-Brown and Sadlak of Connecticut.

All Not Bright for Labor

All was not perfect for the democrats and unionists, however. Gov. G. Mennen Williams' victory in Michigan was not as strong as it might have been, and his chances for the Democratic nomination for President in 1960 are being discounted. By the same token, an effort by the unionists to bring one of their own leaders onto the national political scene in 1960 (who else but Walter Reuther?) seems to have been set back.

Labor can take heart from this rather sad situation: A fair to middling recession appears to be the best way for the Democrats to sweep the country. The Republicans were hurt nationally by Ike's veto of the Depressed Areas Bill, and Democratic upsets showed up fairly consistently in places where the recession was felt the worst. The western Democratic victories must be laid in large part to the troubles of the mining industry.

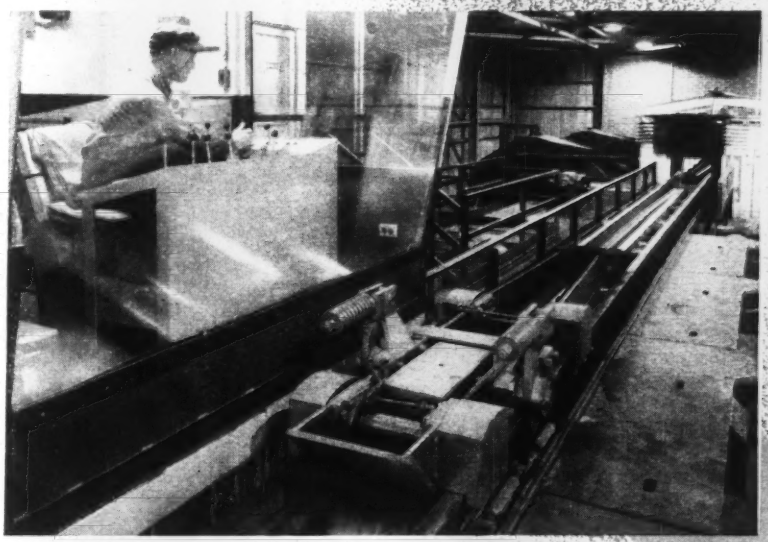
Which Democrat Will Get the Nod?

Looking down the list of successful Democratic candidates, these names stand out: Governor Rubicoff (Conn.), Governor-elect DiSalle (Ohio), Senator Kennedy (Mass.), Senator Symington (Mo.), Senator Mansfield (Mont.), and Senator Jackson (Wash.).

It's even money that Adlai Stevenson wrote himself out of the running about 10 p.m. last Tuesday. He needed something less than a Democratic sweep to insure his candidacy, just as Vice President Nixon lost face with the Republican victory in New York. Too many strong Democrats are around for Mr. Stevenson to fight, and just one strong Republican is enough to bother the Veep.

Strategists with an ear for the Catholic vote take heart from Senator Kennedy's sweep and Senator-elect McCarthy's victory in Minnesota. If the party resists the temptation to avenge Al Smith, either of the governors, Rubicoff or DiSalle, will have better chances than Senators Symington, Mansfield, or Jackson.

MORGAN MILLS
MORGAN QUALITY



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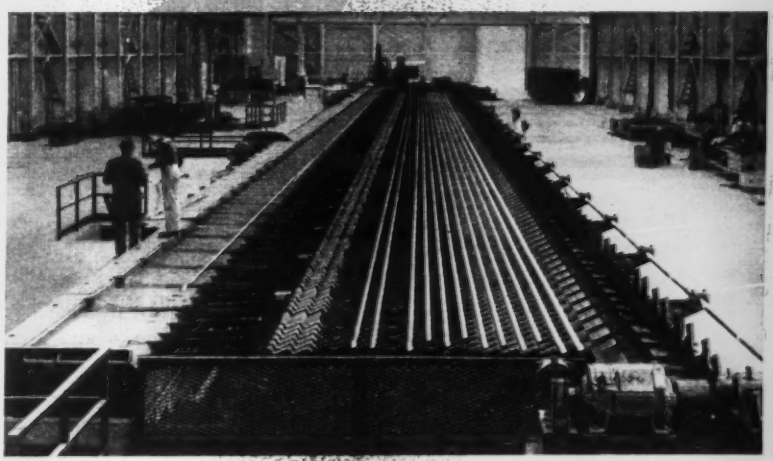

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Natural diamonds

GE's manmade diamonds

U. S. Industrial Diamond Consumption*

(Millions of carats)

	Bort	Stones	Totals
1959†	5.5	6.5	12.0
1958	4.0	4.5	8.5
1957	6.0	7.0	13.0
1956	7.0	7.0	14.0
1955	5.0	6.0	11.0
1954	8.0	6.0	14.0

*Estimated by STEEL on basis of sales from imports and open stocks. Does not include government stockpile requirement. †Predicted. All figures include natural and manmade diamonds.

Future Glitters for Manmade Gems

GROWING ACCEPTANCE of GE's manmade industrial diamonds is being felt by the natural industrial diamond cartel.

The gems, introduced only a little more than a year ago by the Metallurgical Products Dept., General Electric Co., Detroit, are being used in grinding wheels, lapping compounds, and micronized diamond powders for polishing parts having critical tolerances.

De Beers Consolidated Mines Ltd., the syndicate which controls over 97 per cent of the world's diamond supply, is worried. GE is aiming at about 70 per cent of the market in those applications.

"Grinding wheels alone take up 70 to 75 per cent of all the crushed diamonds (bort) use in the U. S.," says Arthur Scutt, manager of Carborundum Co.'s diamond products plant, Niagara Falls, N. Y.

Diamond users estimate GE's sales this year at about 750,000 carats, which is around 25 per cent of its potential market. Last year, the company said its capacity would be 3.5 million carats by the end of this year.

• **Prices Are Competitive** — When GE's product first appeared, its price was $5.10 a carat. Now it's about $2.96 a carat; syndicate prices have remained about $2.85 a carat.

Indications are that prices will shortly stabilize around present syndicate levels.

Syndicate men are also worried over statements like this one from Francis Lennon, general superintendent, Kennametal Inc., Latrobe, Pa.: "We'll probably be wanting more manmade diamonds in the next few years. They're as good if not better than natural bort for fixed feed grinding with resinoid bonded wheels."

• **Development Continues** — John D. Kennedy, manager of the diamond section, GE's Metallurgical Products Dept., says that a project to develop tougher crystals for metal bonded wheels will begin soon.

"Also," says Mr. Kennedy, "we want to go farther by developing bort specifications so customers will be guaranteed a certain percentage of given mesh sizes in every 10,000-carat purchase."

• **Diamond Supply Stabilized**—Referring to GE's competition, the Industrial Diamond Association says: "Reports concerning the use of the GE manmade diamonds indicate that it is still too early to obtain a sound evaluation of their use. The advent of the manmade diamond and recent announcements of ample supply from natural diamond sources have tended to stabilize the supply of industrial diamonds for abrasive purposes. Technical developments have been encouraged. They are bound to increase the market for natural and manmade diamonds."

• **Consumption to Rise**—Domestic consumption is expected to climb back to prerecession levels of some 12 million carats in 1959 (vs. an estimated 8.5 million this year). Over half are expected to go into cutting and tool stones—areas in which the manmade product is not competitive due to the size of the stones used.

• **New Standards for Tool Stones**—A new set of standards covers classification, designation, definition, and shank dimension tolerances of diamond tools used for dressing or truing grinding wheels. They were developed by the American Society of Tool Engineers and the Industrial Diamond Association, New York.

Seven Ways To Save Time:

DELEGATE AUTHORITY.

Make responsibility for each job filter down to the lowest level at which it can be handled effectively.

PLAN.

Outline your responsibilities and arrange them in order of importance. Then tackle them systematically.

ORGANIZE

your department so that you directly supervise as few people as possible. Otherwise, you'll spend too much valuable time patching up disagreements, says M. K. Sheppard, Cleveland management consultant.

CHART.

Functional organization charts are helpful. They spell out each man's responsibility and scope of authority. They eliminate duplication, set objectives, help to measure performance, says Mr. Sheppard.

REPORTS.

Do you receive all of the information you need to make decisions? And no unnecessary paper?

TRAIN

your subordinates to continually assume greater responsibility. That's one of your most important jobs, believes Mr. Sheppard.

LIST PROBLEMS

in the order of their profit potential. Then tackle them one at a time. A shotgun approach is usually slower.

Memo to: Busy Executives Subject: How To Save Time

IF YOU ARE an average STEEL reader, you're extremely busy.

You're a regular performer on the management team. You indirectly supervise about 300 employees, attend expositions, serve on committees, and devote a great deal of time to planning and policy determination. You need time for your home and family, too, and you probably like to fish or golf.

• **Objective**—So STEEL asked two Cleveland management consultants to provide tips on how you could discharge responsibilities in less time without sacrificing quality of performance. Among tools they recommend highly are functional organization charts or job descriptions and proper control reports.

Do You Know Your Job?

"A lot of management time is wasted because executives don't know the scope of their responsibility," reports Edgar Bleick of Turton Associates. He says position descriptions and functional organization charts can solve the problem. A position description defines a man's function and scope of authority and outlines his major duties and responsibilities. Mr. Bleick says it has these advantages:

• **For the Man**—1. It reduces the uncertainties that undermine his effectiveness. 2. It curtails internal policies and power struggles. 3. It eliminates duplication of effort. 4. It gives him a goal—shows him what his superiors think he should be doing. 5. It pinpoints his relationships with other departments so all operations are more easily coordinated. 6. It lets him devote full time to his assigned duties; he doesn't have to fight off the invasion of his area by others who want to expand their scope of influence. 7. It pinpoints those responsible to him, to whom he reports, to whom he can delegate, and whom he must keep advised on what. 8. It

lets him report to only one boss, eliminating conflicts. 9. It lets him learn the requirements for other positions so he can better prepare himself for advancement. 10. It allows the development of good performance standards. 11. It tends to bring out promotions and pay hikes on the basis of results rather than personal relationships.

• **For the Company**—1. It assures that all important functions are assigned to the correct individual. 2. It's an aid in placement and promotion. 3. It allows faster training since the man immediately gets a clear understanding of his responsibility. 4. It slashes paperwork, committee meetings, and conferences since problems are easily referred to the proper individual rather than to everyone who might be able to aid in the solution.

• **For the Customer**—1. It makes for faster answers on questions of delivery, quality, specifications, and price since problems can be promptly routed to the right man. 2. It usually improves service due to the direct responsibility placed on each person for specific actions and results.

• **It Works**—"Men like job descriptions because they like organization," asserts M. K. Sheppard of M. K. Sheppard & Co. He says managers like to have policies and procedures defined.

Are You Properly Informed?

"Unless a manager is given the information he needs (and only that), he'll waste time making routine decisions," believes Mr. Bleick. He tells this story about a machinery maker:

• **Problem**—The company had difficulty meeting delivery schedules. Individual problems were taken up in staff meetings and, before long, the division manager, plant manager, quality control supervisor, engineering manager, and product sales managers were devoting most of their time to delivery details. Each revision of the production schedule disrupted other schedules in other departments, worsening the condition. And management was overlooking other important duties.

• **Solution**—Turton was called in. Priorities were set on all existing orders and production was scheduled on that basis. The production control department assigned delivery dates on all new orders. That solved the problem.

To keep it from recurring, new control reports were devised. They included: 1. Quality reports. Foremen get them for each piece of equipment. Superintendents and plant managers get them for departments and sections. They point out areas where rejections occur. 2. Output vs. standard reports. Foremen and superintendents get them by product. Plant managers and division managers get them by sections. The superintendent can catch problems, check them with foremen, and report to the plant manager. 3. Backlog reports. Foremen get them by individual machines. Upper management gets them by types of machine. 4. Cost vs. standard reports are issued on the same basis.

• **Results** — Upper management doesn't have to concern itself with details. It knows where the problems are and can delegate responsibility for corrections to subordinates. Communications, as well as deliveries, have improved and each man is now working at his proper level.

Concept Is Key

Judson F. H. Turton, president, Turton Associates Inc., agrees with Mr. Bleick and Mr. Sheppard that basic concepts rather than gimmicks are the key to saving time. They say managers must realize, as they move up the ladder, that they must devote more time to policy and planning and less to control and supervision of operations. For example, a foreman should spend around 90 per cent of his time on control and supervision; a company president should spend more than 90 per cent of his time planning and setting policy. Warning: Percentages vary by size of company. The president of a small firm might split his time 50-50.

• **Delegate**—Mr. Sheppard suggests this procedure for budgeting your time: List your responsibilities and the objectives of your company, division, or department. Determine how much each function contributes to profit (in lower costs, better quality, increased sales, faster production). Then give the best profit-producers top time priority. Be careful not to overestimate the importance of things you like to do. Managers tend to devote too much time to familiar phases of their jobs.

Then describe the objectives to your subordinates and tell them what part they play. Don't tell them how, just what and why; but give them a target date and leave the door open for them to seek your advice and keep you informed on progress. But don't get buried in the details.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

R&D Results Studied

Case project aimed at getting most profits from investment; spending tops $6 billion yearly

WHAT IS YOUR research dollar buying? Is investment in research and development producing the best possible results?

With industry spending over $6 billion a year for R&D, metalworking executives would like answers to those questions. Case Institute of Technology is seeking the answers in a study supported by the National Science Foundation.

The project comprises three stages. In the first, Case will show how company progress is affected by R&D investment. An operations research group hopes to complete a manual in 1959 which can be used by industry as a guide to how much money should be spent. Benefits to metalworking management will include selecting the most favorable projects and deciding when they should begin and end.

• **How Research Helps**—The second step will be to extend findings in company studies to an analysis of an entire industry. First target: The chemical industry.

In the final stage, Case will add to its formula to show how research expenditures in a single industry affect profits of other industries.

The school will also consider such variables as general economic conditions, pricing and marketing of the firm's product, and the firm's internal organization.

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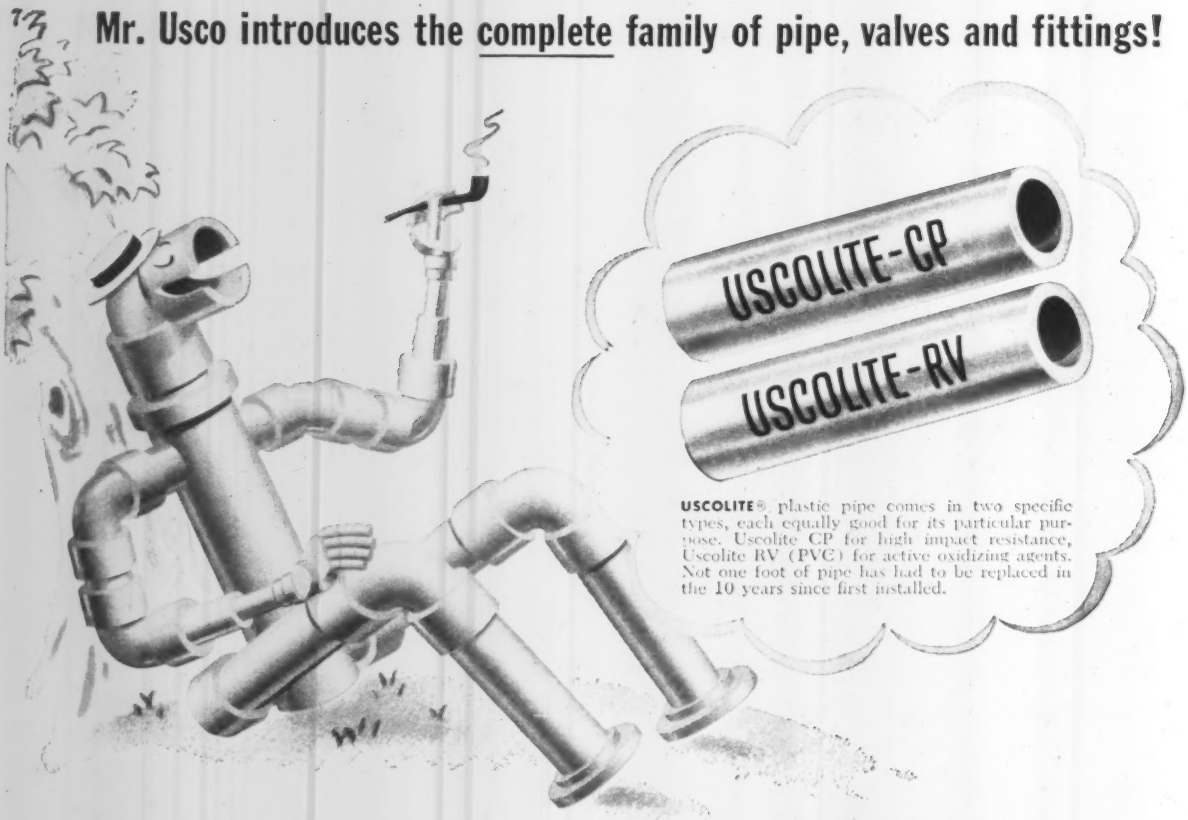
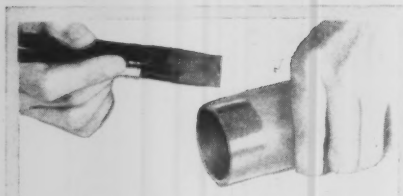
PIPE DREAMS come true!

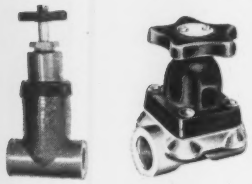
Mr. Usco introduces the complete family of pipe, valves and fittings!



USCOLITE® plastic pipe comes in two specific types, each equally good for its particular purpose. Uscolite CP for high impact resistance, Uscolite RV (PVC) for active oxidizing agents. Not one foot of pipe has had to be replaced in the 10 years since first installed.



USCOWELD* Fittings are the only solvent-weld fittings with an interference fit. Greater joint strength, faster insertion. Non-porous, leak-proof. Made of either Uscolite CP or RV materials.



USCO® VALVES offer a choice of either Hills-McCanna diaphragm valve or Vanton "Flex-Plug" gate valve.

USCOFLOW is a new, black utility pipe, especially suited where low first costs are a factor. It is a blend of styrene-base resin and synthetic rubber for good impact resistance and high tensile strength.

The "Usco" Plastic Pipe Line of precision-molded pipe and fittings for every corrosion and flow problem includes elbows, tees, couplings, flanges, reducing bushings, plugs, caps, nipples, bends.

When you think of plastic, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality plastic pipe and fittings.

Mechanical Goods Division

*Patent applied for

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'59 Models—Compare Before You Buy

(Based on four-door hardtop sedans with V-8 engines)

MAKE	SPECIFICATIONS								ACCESSORY PRICES				
	Price	Wheelbase	Length	Height	Weight	BHP/RPM	Displacement	Comp. Ratio	Auto Trans.	Power Steering	Power Brakes	Radio	Heater & Defroster
PLYMOUTH													
Savoy*††	$2,282.75	118	210	56.6	3,275	132/3,600	230	8:1	$189.10	$76.60	$42.60	$73.00	$74.40
Belvedere	2,580.75	118	210	56.6	3,405	230/4,400	318	9:1	189.10	76.60	42.60	73.00	74.40
Fury	2,771.25	118	210	56.6	3,505	305/4,600	361	10:1	189.10	76.60	42.60	73.00	74.40
DODGE													
Coronet*††	2,586.50	122	217.4	54.9	3,512	132/3,600	230	8:1	189.10	92.15	42.60	86.50	93.55
Royal V-8	3,068.50	122	217.4	54.9	3,691	295/4,600	361	10.2:1	189.10	92.15	42.60	86.50	93.55
Custom Royal	3,279.25	122	217.4	54.9	3,745	305/4,600	361	10:1	189.10	92.15	42.60	86.50	93.55
DE SOTO													
Firesweep	3,038.00	122	215.5	54.7	3,700	290/4,600	361	10:1	189.00	106.30	42.60	94.20	97.80
Firedome	3,398.00	126	219.5	55	3,895	305/4,600	383	10.1:1	226.80	106.30	42.60	94.20	97.80
Fireflite	3,888.00	126	221.1	55	3,950	325/4,600	383	10.1:1	Std	106.30	42.60	94.20	97.80
CHRYSLER													
Windsor	3,353.00	122	216.6	54.9	3,830	305/4,600	383	10.1:1	Std	107.60	43.50	99.80	101.90
Saratoga	4,104.00	126	220.6	55.3	4,035	325/4,600	383	10.1:1	Std	Std	Std	99.80	136.30
New Yorker	4,533.00	126	220.9	55.6	4,165	350/4,600	413	10.1:1	Std	Std	Std	99.80	136.30
Crown Imperial	5,647.00	129	226.3	56.8	4,840	350/4,600	413	10.1:1	Std	Std	Std	153.40	136.30
FORD													
Custom 300*††	2,273.00	118	208	56	3,583	145/4,000	223	8.4:1	189.60	75.30	43.20	58.58	74.50
Fairlane††	2,411.00	118	208	56	3,627	200/4,400	292	8.8:1	230.80	75.30	43.20	58.58	74.50
Fairlane 500	2,720.00	118	208	56	3,652	225/4,400	332	8.9:1	230.80	75.30	43.20	58.58	74.50
EDSEL													
Ranger*	2,671.80	120	210.9	56	3,678	145/4,000	223	8.4:1	189.60	81.80	43.25	64.95	74.45
Corsair	2,884.50	120	210.9	56.2	3,916	200/4,400	292	8.8:1	189.60	81.80	43.25	64.95	74.45
MERCURY													
Monterey	2,917.50	126	217.8	55.8	N.A.	210/4,400	312	8.7:1	225.80	107.50	43.75	87.00	91.40
Montclair	3,437.00	126	217.8	56.1	N.A.	280/4,400	383	10:1	Std	107.50	43.75	87.00	91.40
Park Lane	4,031.00	128	222.8	56.1	N.A.	345/4,400	430	10:1	Std	Std	Std	87.00	91.40
LINCOLN													
Lincoln	5,089.60	131	227.1	56.7	5,000	350/4,400	430	10:1	Std	Std	Std	141.30	129.00
Premiere	5,594.20	131	227.1	56.7	5,015	350/4,400	430	10:1	Std	Std	Std	141.30	129.00
Continental Mark IV	6,845.30	131	227.1	56.7	5,155	350/4,400	430	10:1	Std	Std	Std	Std	Std
CHEVROLET													
Biscayne*††	2,301.00	119	210.9	56	3,619	135/4,000	235.5	8.2:1	199.10	75.35	43.05	62.35	80.25
BelAir††	2,558.00	119	210.9	56	3,647	185/4,600	283	8.5:1	199.10	75.35	43.05	62.35	80.25
Impala	2,782.00	119	210.9	56	3,655	250/4,400	283	9.5:1	199.10	75.35	43.05	62.35	80.25
PONTIAC													
Catalina	2,844.00	122	213.7	56.4	3,990	245/4,200	389	8.6:1	231.34	107.50	43.00	101.65	101.65
Star Chief	3,138.00	124	220.7	56.4	4,040	245/4,200	389	8.6:1	231.34	107.50	43.00	101.65	101.65
Bonneville	3,333.00	124	220.7	56.4	4,070	260/4,200	389	8.6:1	231.34	107.50	43.00	101.65	101.65
OLDSMOBILE													
Dynamic 88	2,902.00	123	218.4	54.2	4,231	270/4,600	371	9.7:1	231.34	107.50	43.00	101.65	101.88
Super 88	3,178.00	123	218.4	54.2	4,276	315/4,600	394	9.7:1	231.34	107.50	43.00	101.65	101.88
98 Series	3,890.00	126.3	223	54.2	4,428	315/4,600	394	9.7:1	Std	Std	43.00	101.65	101.88
BUICK													
LeSabre	2,925.00	123	217.4	57.1	4,266	250/4,400	364	10.5:1	220.38	107.50	43.00	102.13	102.13
Invicta	3,515.00	123	217.4	57.1	4,373	325/4,400	401	10.5:1	Std	107.50	43.00	102.13	102.13
Electra	3,963.00	126.3	220.6	57.3	4,573	325/4,400	401	10.5:1	Std	Std	Std	102.13	102.13
CADILLAC													
Series 62	5,080.00	130	225	56.2	4,835	325/4,800	390	10.5:1	Std	Std	Std	164.60	128.70
60 Special	6,233.00	130	225	56.2	4,890	325/4,800	390	10.5:1	Std	Std	Std	164.60	128.70
Fleetwood 75	9,533.00	149.8	244.8	59.3	5,490	325/4,800	390	10.5:1	Std	Std	Std	164.60	128.70
Eldorado Brougham	13,075.00	130	225	56.2	N.A.	345/4,800	390	10.5:1	Std	Std	Std	Std	Std
RAMBLER													
American Deluxe*†	1,835.00	100	178.3	57.3	2,476	90/3,800	195.6	8:1	178.50	N.A.	N.A.	57.70	72.00
Rambler 6*	2,343.00	108	191	58	2,961	127/4,200	195.6	8.7:1	199.50	69.50	37.95	75.65	76.00
Rebel	2,588.00	108	191	57.8	3,338	215/4,900	250	8.7:1	219.50	79.50	37.95	75.65	76.00
Ambassador	2,822.00	117	200	57.6	3,483	270/4,700	327	9.7:1	229.50	89.50	39.95	87.10	82.50
STUDEBAKER†													
Deluxe Lark*	1,925.00	108.5	175	57.5	2,534	90/4,000	169.6	8.3:1	199.50	N.A.	37.66	60.50	71.00
Regal Lark	2,410.00	108.5	175	57.5	2,677	180/4,500	259.2	8.8:1	199.50	44.95	37.66	60.50	71.00
Silver Hawk	2,495.00	120.5	204	55.5	2,795	180/4,500	259.2	8.8:1	199.50	44.95	37.66	60.50	71.00

Prices include federal excise tax, plus suggested handling and distribution charges. State and local taxes, transportation charges, and accessories are not included. *Six-cylinder engines. †Indicates two-door models. Shipping weights are approximate. Some V-8s listed on higher lines are optional. ††Indicates four-door sedan.

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Sales May Hit 7 Million?

Disposable income rise will trigger gains in new car purchases next year, economist at University of Illinois believes. Detroit nods approval but remains cautious

NEW CAR sales in 1959 may top 6 million or 7 million units, declares Prof. Hans Brems, University of Illinois economist. Speaking at the University of Michigan's sixth annual conference on the economic outlook, Professor Brems points out that disposable income (which is climbing faster than prices) is a key to sales: "If disposable real income rises $10 billion in 1959, car sales should total about 6.3 million."

Motordom tends to take a dim view of forecasts by outside experts, but the industry will be quick to laud Professor Brems if November and December sales show the strength that has been reported so far this year.

• **Spot Checks**—Ford Div. sales for Oct. 11-20 show that it accounted for 33 per cent of the market in that period, a 5.2 per cent gain over the previous period. Chevrolet is recovering from strikes and hasn't issued a sales report, but optimistic dealers assert that 1959 will be a repeat of banner 1955. Chevy will have built about 60,000 new cars by Nov. 15.

Those reports are spotty, but they lend credence to Professor Brems's claims. He adds: "There's not the slightest reason to believe the small car share of the market will remain at 10 per cent, the level it attained in the first half of 1958." He thinks smaller cars, imported and domestic, can exceed 630,000 units in 1959. American Motors Corp. would agree with that estimate. AMC's last sales report shows that '59 dealer orders and sales total over 80,000—double year-ago sales. The company says calendar year production will hit 219,000 this year, compared with 107,178 for calendar 1957.

• **Critics Beware!**—Detroit fervently hopes Professor Brems is right even though its own forecasts are more cautious and possibly more correct. Aside from the obvious asset of increased sales and profits, a boom would answer critics who have been booing new car styling. (Fins are a mighty tender part of motordom's anatomy this year.)

The latest blast comes via Carl Sundberg, president of the industrial design firm, Sundberg-Ferar Inc., Detroit (see STEEL, June 16, p. 61). Mr. Sundberg told members of the American Society of Body Engineers: "Design critics are like eunuchs; they can't do it themselves, but they can sure tell you how it should be done." He and fellow designers agree that 1958 has been one of the saddest years in auto styling history. "We estimate that 90 per cent of the cars were worse stylewise than they were in 1957. While 1959 has not brought the hoped-for improvement, we feel that about 60 per cent of the new cars are an improvement over '58s," asserts Mr. Sundberg.

• **Letters Received** — He quotes from designer William Goldsmith: "We see definite improvement in the style areas of the General Motors line, but to say that the '59 models are improved over '58s is granting doubtful honors. The side views of most cars have been improved. Pontiac's front is cleaner and offers a more individual point of perspective on the car. Oldsmobile is many times better, but how could it have been worse?"

Writes Carl Bjorncrantz, chief designer, Sears Roebuck & Co., Chicago: "The automobile designer can make an important contribution to his product—the success or failure of which vitally affects the entire economy of our country. To make a real contribution, however, he must have the opportunity to design, not to delineate a fantasy that the sales manager of some dealer in Podunk insists will sell."

• **Slightly Biased?**—Those are designers talking. They're in nonautomotive styling fields by choice, not necessity. They obviously think designers should have more freedom, and they are acknowledged experts—in design. But if sales run as hot as Professor Brems predicts, that dealer in Podunk and Mr. B.'s imaginative salesman won't be completely out of ammunition when they say to stylists: "It might not be perfect, but don't knock it too hard, buddy—it sells."

Whether or not you agree with the critics, you'll still want to compare 1959 model specifications and prices (Page 89) with 1958's. STEEL's 1958 model spec sheet can be found on Page 123 of the Nov. 18, 1957, issue.

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
July	321,053	495,628
August	180,324	524,354
September	131,924	283,852
October	259,000†	327,362
10 Mo. Total	3,134,151	5,004,085
November		578,601
December		534,714
Total		6,117,400

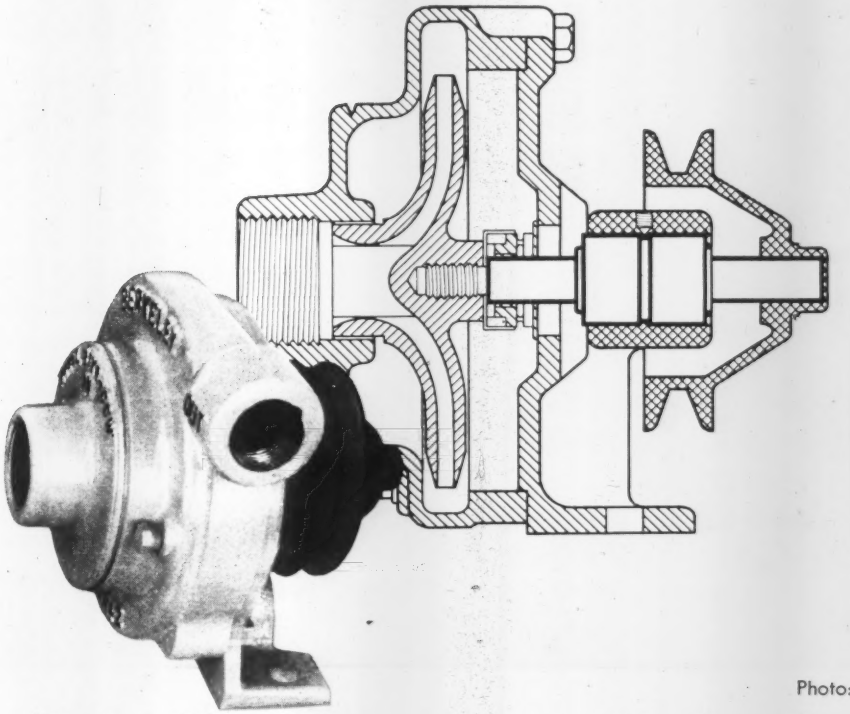
Week Ended	1958	1957
Oct. 4	34,464	21,975
Oct. 11	34,834	38,526
Oct. 18	45,387	72,180
Oct. 25	70,973	104,987
Nov. 1	101,112†	126,139
Nov. 8	150,000*	136,742

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

Beat the Experts

Is your crystal ball cloudy or clear? You can match wits with the professional predictors on 1959 auto production. See "Mirrors of Motordom" next week, Nov. 17, for details on STEEL's Beat-the-Experts contest.

CASE HISTORIES



Compact integral shaft and bearing unit eliminates parts —cuts assembly time.

Photo: Courtesy Berkeley Pump Co.

Ball Bearings Help Cut Size... Lower Costs $2.50 Per Pump!

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Redesign utility water pump for Air Conditioner market. Conversion must achieve smaller size without reducing pump capacity. At the same time, customer must lower over-all production costs.

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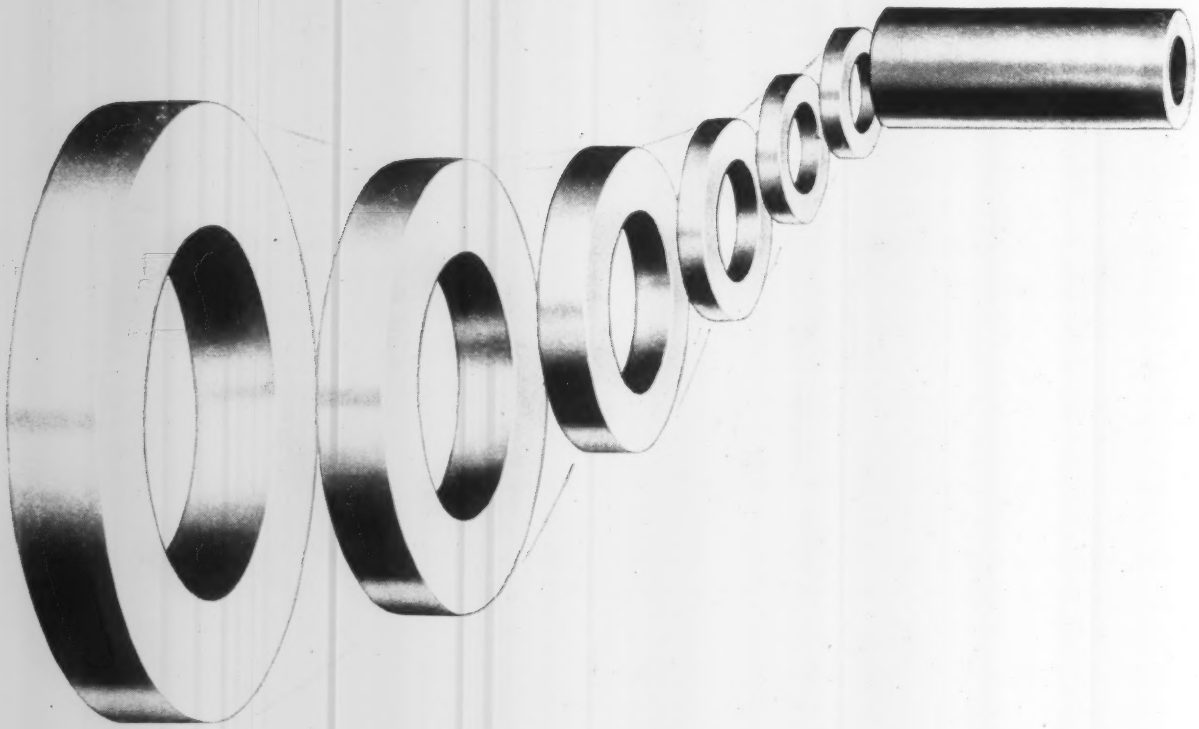

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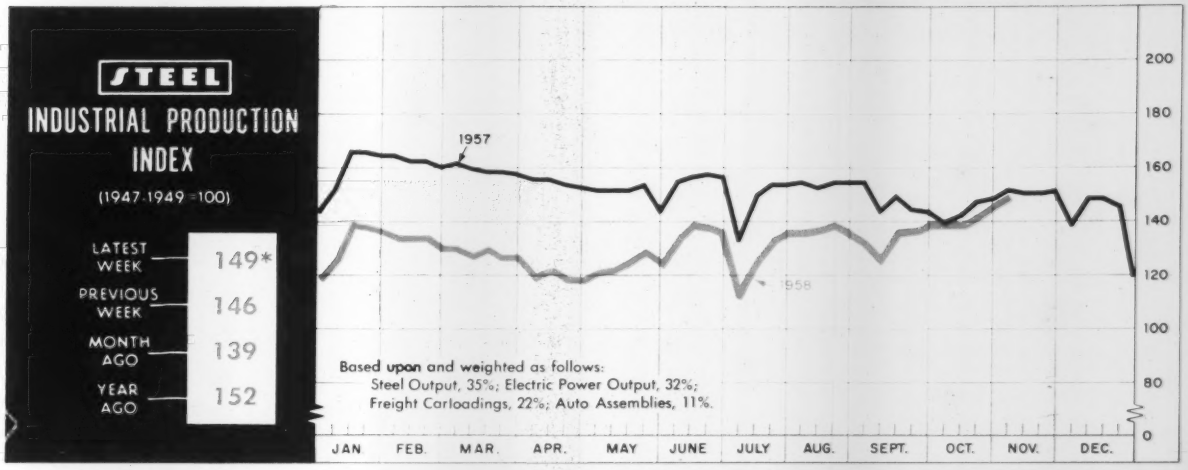

*Week ended Nov. 1.

Moderate Uptrend Seen for 1959

BOOMLESS PROSPERITY: That's the recovery pattern many businessmen and economists predict for the rest of 1958 and 1959. Even though it will mean record performances in some segments of industry, it is doubtful that 1959 will be considered nearly as spectacular as 1956 or 1957.

November opens the season for economic forecasting, and early indications hint that crystal ball gazers may be more in agreement than they have been in most postwar years. Two of the better known forums—F. W. Dodge Corp.'s poll of 212 economists and the annual Pitt Conference on Business Prospects—go almost hand-in-hand with the boomless prosperity concept.

• **Unanimity Reigns**—Of the economists surveyed by Dodge, all but two expect gross national product to rise above the mid-1958 level next year, and all but four think the Federal Reserve Board's industrial production index will show a similar trend. While the median estimate for GNP was $460 billion by the end of 1959, there was strong support for $480 billion.

The group sees a somewhat faster increase in the FRB index, which George Cline Smith, Dodge vice president and economist, feels is consistent with the faster decline in production at the start of the recession. The median rise is to 147 (1947-49 = 100) by the end of next year, although 25 economists said 150. That would be a record. A few extreme pessimists indicated the rise would be minute—about 4 points above the current reading of 137.

Here are the median estimates for other items polled by Dodge:

• **Consumer Prices**—The government's index will rise to 125.5 (1947-49 = 100) by next yearend, compared with 123.7 in September.

• **Wholesale Prices** — This index will rise at about the same rate, reaching 121 by next December,

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,011[1]	2,024	1,996
Electric Power Distributed (million kw-hr)	12,200[1]	12,175	11,860
Bituminous Coal Output (1000 tons)	8,465[1]	8,530	9,913
Crude Oil Production (daily avg—1000 bbl)	6,900[1]	6,919	6,712
Construction Volume (*ENR*—millions)	$272.9	$251.4	$370.7
Auto, Truck Output, U. S., Canada (*Ward's*)	127,339[1]	90,410	154,893
TRADE			
Freight Carloadings (1000 cars)	670[1]	674	714
Business Failures (Dun & Bradstreet)	275	288	281
Currency in Circulation (millions)[3]	$31,299	$31,435	$31,008
Dept. Store Sales (changes from year ago)[3]	+3%	+6%	−1%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,061	$24,399	$21,630
Federal Gross Debt (billions)	$280.7	$280.5	$274.4
Bond Volume, NYSE (millions)	$31.8	$26.1	$22.9
Stocks Sales, NYSE (thousands of shares)	20,737	19,464	9,958
Loans and Investments (billions)[4]	$94.1	$94.6	$86.5
U. S. Govt. Obligations Held (billions)[4]	$31.9	$32.1	$25.3
PRICES			
STEEL's Finished Steel Price Index[5]	246.65	246.65	239.15
STEEL's Nonferrous Metal Price Index[6]	215.6	215.2	206.9
All Commodities[7]	118.5	118.6	117.5
Commodities Other than Farm & Foods[7]	126.1	126.1	125.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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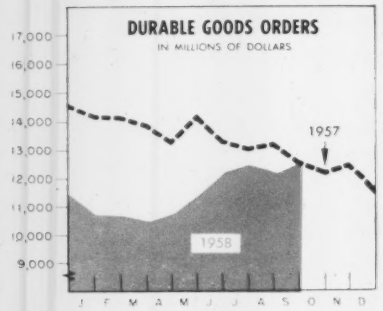
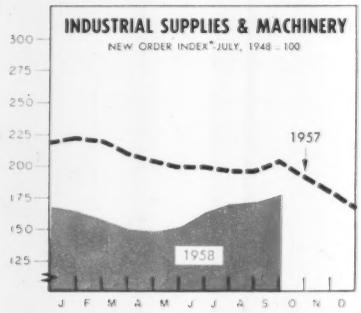
THE BUSINESS TREND



	New Orders*		Sales*	
	1958	1957	1958	1957
Jan.	10,704	14,176	12,646	14,941
Feb.	10,688	14,102	12,038	14,808
Mar.	11,488	13,853	11,670	14,198
Apr.	10,833	13,234	11,532	14,254
May	11,423	14,115	11,643	14,296
June	12,245	13,249	12,086	14,207
July	12,512	13,005	12,256	14,573
Aug.	12,200†	13,160	12,400†	14,297
Sept.	12,600†	12,519	12,600†	14,132
Oct.	.....	12,154	.....	13,932
Nov.	.....	12,434	.....	13,548
Dec.	.....	11,399	.....	13,092

*Seasonally adjusted. †Preliminary.
U. S. Office of Business Economics.



	1958	1957	1956
Jan.	163	221	190
Feb.	157	219	190
Mar.	149	210	190
Apr.	148	203	195
May	152	199	199
June	164	199	197
July	170	197	203
Aug.	172	197	211
Sept.	178	203	203
Oct.	...	192	206
Nov.	...	180	220
Dec.	...	167	218

*Seasonally adjusted.
Amer. Supply & Machinery Mfrs.' Assn.

Charts copyright, 1958, STEEL.

compared with September's 119.1.

• **Average Hourly Wages** — For durable goods industries, the trend will be solidly upward. For nondurables, no one thinks the trend will be down, but there is not quite as much agreement on a strong uptrend. Building wages could be the softest of all next year, but the majority of the respondents think the trend still will be up.

• **Plant and Equipment**—Spending in 1959 will total $33 billion, 6 per cent above the current estimate of $31 billion for 1958.

• **Construction** — Total spending will rise from an annual rate of $49.1 billion in this half to $50 billion in 1959's first half and $50.5 billion the last half.

• **Housing Starts**—There will be a slight decline in homebuilding next year, with a first half annual rate of 1.1 million starts tapering off to 1,075,000 in the second half. That compares with an estimate of 1.1 million for the current period.

• **Consumer Spending**—Next year will see a record total of $300 billion, compared with annual rates of $287.2 billion in this year's first half and $291 billion in the second half.

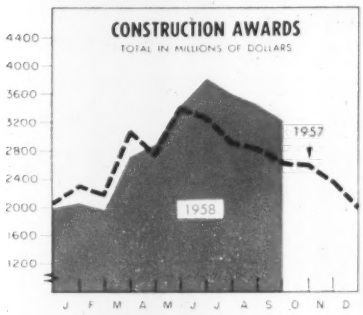
Pitt Forecasters Agree

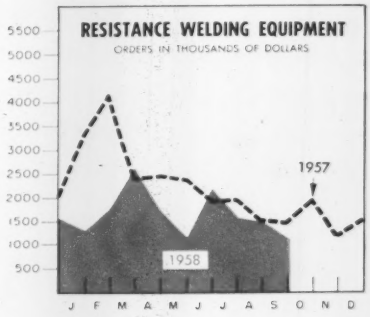
At the Pittsburgh conference, F. Russell Widmer, Republic Steel Corp. economist, said that steel output in 1959 will fall between 102 million and 110 million tons (see Page 165), compared with an estimated 85 million tons this year.

The aluminum industry will keep pace with steel, indicates E. M. Strauss, manager of commercial research for Aluminum Co. of America. Shipments of pig and mill products will rise to between 2 million and 2.1 million tons, he claims. That would be 15 or 20 per cent above the 1958 level. (See Page 190.)

The factors will have a strong influence on freight carloadings, and along with other upward pressures will bring a 10 per cent increase over this year's figure, says David C. Melnicoff, manager of economic analysis for the Pennsylvania Railroad. This in turn will make it necessary (and also possible) for the roads to step up their carbuilding programs, which now "are mostly in the talking stage," he states.

Coal consumption next year will rise about 7 per cent above the anticipated 1958 level, declares George





	Total		Building	
	1958	1957	1958	1957
Jan.	2,066.1	2,299.6	1,536.2	1,730.7
Feb.	1,953.4	2,161.0	1,478.1	1,695.5
Mar.	2,721.2	3,078.0	2,037.7	2,199.7
Apr.	2,881.0	2,776.4	2,198.0	2,069.7
May	3,402.6	3,399.5	2,470.3	2,416.8
June	3,819.6	3,243.5	2,340.3	2,341.5
July	3,607.1	2,900.7	2,633.5	2,247.6
Aug.	3,466.6	2,818.0	2,529.5	2,291.8
Sept.	3,215.9	2,624.9	2,352.5	2,092.2
Oct.	.....	2,613.8	.....	2,075.6
Nov.	.....	2,370.7	.....	1,808.5
Dec.	.....	1,982.3	.....	1,457.5
Totals	.....	32,268.4	.....	24,427.1

F. W. Dodge Corp.

	Net Orders		Shipments	
	1958	1957	1958	1957
Jan.	1,243	3,310	1,422	3,161
Feb.	1,683	4,161	1,615	2,386
Mar.	2,550	2,360	1,659	2,845
Apr.	1,684	2,429	1,963	3,111
May	1,121	2,340	1,750	2,891
June	2,113	1,936	2,346	2,735
July	1,534	1,943	2,342	3,194
Aug.	1,431	1,501	1,419	2,591
Sept.	1,060	1,463	1,125	2,528
Oct.	....	1,933	....	1,953
Nov.	....	1,167	....	2,227
Dec.	....	1,501	....	1,969
Totals	....	26,044	....	31,591

Resistance Welder Manufacturers' Assn.

A. Lamb, manager of business surveys for Consolidation Coal Co. Metalworking is expected to lead the trend by upping its consumption from 77 million tons this year to about 108 million tons in 1959, nearly equivalent to the 1957 figure.

Sales of farm machinery by International Harvester Co. will rise about 10 per cent next year, claims Arden S. Knudsen, assistant manager of farm equipment sales. He says another major producer has estimated a 15 per cent increase, while others cite smaller gains.

Theodore J. Taylor, assistant controller of Pittsburgh Plate Glass Co., would find little to argue about with the Dodge poll as far as construction is concerned. He pegs next year's outlays at $50 billion.

Uptrend Firmly Established

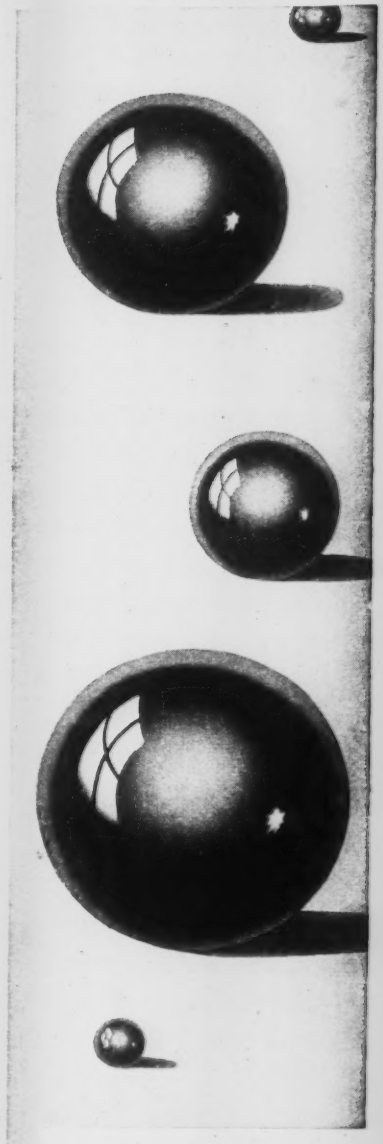
Members of the National Association of Purchasing Agents report that the foundation for gradual improvement is well established. In their October report on business conditions, 54 per cent of the survey respondents said that production was increasing. It is the highest percentage to report an uptrend since early 1955. Fifty per cent reported better new orders, although labor difficulties in the auto industry dampened the report somewhat.

Employment continues to show gains, but there is a tendency to make more effective use of present personnel rather than add new workers. The average workweek is getting longer as a result.

The report indicates that inventory cut backs are almost over. This is borne out by the September report of the Commerce Department which shows that manufacturers' stocks were reduced by only $200 million (seasonally adjusted), compared with a reduction of $400 million in August.

Index Jumps Up Again

STEEL's industrial production index posted its third major gain in a row for the week ended Nov. 8, reaching a preliminary mark of 149 (1947-49 = 100). This was a rise of 3 points, following gains of 3 and 4 points in the two preceding weeks. Auto output accounts for most of the increase. Steel production has temporarily leveled off (see Page 165), and freight carloadings have begun a seasonal decline. Electricity output is in the initial stage of a seasonal uptrend.



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W. J. MUTSCHLER
Continental production eng.

R. T. EAKIN
Latrobe operations v. p.

G. L. SITTSER
Bay City Shovels exec. v. p.

WILBUR C. STAUBLE
Veeder-Root president

W. J. Mutschler was appointed general manager of production engineering, metal division, **Continental Can Co.**, New York. He was general manager, cannery equipment service, and is replaced by **B. D. Bloser**, former central division manager of production engineering. **J. L. Tokich**, plant manager at Oakland, Calif., replaces Mr. Bloser.

R. T. Eakin was made vice president-operations, **Latrobe Steel Co.**, Latrobe, Pa. He succeeds **J. R. Larson**, retired. Mr. Eakin was works manager at Allegheny Ludlum Steel Co.'s Brackenridge, Pa., plant.

Cooper Alloy Corp., Hillside, N. J., named **William C. Hookway** director of its newly consolidated product engineering department. He will co-ordinate efforts of design development personnel in the company's valve and fitting, foundry products, and Vanton Pump divisions.

Archie J. McElroy was named vice president and general manager, **Reibold Mfg. Co.**, Los Angeles.

Sam Sisto was made assistant sales manager, inside sales, **Midland Screw Corp.**, Chicago.

Chain Belt Co. appointed **Wyatt Dawson** regional manager, southern district offices. He moves to Denver after the first of the year. **Bob DeMott** was made sales manager, Los Angeles district sales office. **Cal Davis** transfers from the conveyor division in Milwaukee to the Philadelphia district office.

G. L. Sittser was elected executive vice president, **Bay City Shovels Inc.**, Bay City, Mich.

Roy B. Siegrist, former general superintendent, was elected vice president of manufacturing, **Sawhill Tubular Products Inc.**, Sharon, Pa. **Abe Lipsick**, director of product development, was made vice president-research and product development. **B. Frank Smith** was made general superintendent of the company, including all four divisions.

Clarence A. Wetherill was made chief engineer, **Stromberg-Carlson Div.**, San Diego, Calif., General Dynamics Corp. **Jack Rosenberg** was appointed manager of engineering, electronic control systems, Los Angeles.

Edward A. Farwig was made manager of proposals, pricing, and orders for **Buhr Machine Tool Co.**, Ann Arbor, Mich.

Clyde W. Kaericher was named director of administration for **Minneapolis-Honeywell Regulator Co.'s** inertial guidance plant in St. Petersburg, Fla. He succeeds **C. W. Skinner**, who resigned to accept a position at Harvard University's School of Business.

Continental-Diamond Fibre Corp., Newark, Del., subsidiary of Budd Co., appointed **E. H. Baugh** Cleveland district sales manager to succeed **George H. Shima**, who will direct CDF's western sales, Los Angeles. **Dan DeBow** succeeds Mr. Baugh as Pittsburgh district sales manager.

Wilbur C. Stauble was elected president, **Veeder-Root Inc.**, Hartford, Conn. He continues as president of the subsidiary, Holo-Krome Screw Corp. **Harvey L. Spaunburg**, president since 1954, succeeds the late **John H. Chaplin** as chairman.

Bruce D. Henderson, vice president of **Westinghouse Electric Corp.**, Pittsburgh, was appointed to the staff of **John K. Hodnette**, executive vice president. He is succeeded by **Raymond K. Serfass** as manager of the air conditioning division at Staunton, Va. Mr. Serfass was vice president and director of operations, York Div., Borg-Warner Corp.

William S. Mahoney was elected president, **Ramsey Corp.**, St. Louis, subsidiary of Thompson Products Inc. He was vice president-general manager.

Frank P. Blonska was appointed central states sales manager, **Cleveland Cap Screw Co.**, Cleveland.

Dr. William A. Bain Jr. was named executive vice president, **Vitro Laboratories**, division of Vitro Corp. of America, with offices at Silver Spring, Md. **Andrew J. Erickson** was made vice president of Vitro Laboratories, and general manager of Vitro Weapons Services at Eglin Air Force Base, Florida. Succeeding Dr. Bain as director of the West Orange, N. J., laboratory is **Arthur S. Locke**, former associate director.

Loy Collingwood was made assistant general sales manager, **Riverside-Alloy Metal Div.**, Riverside,

SAMUEL W. CHANTLER

ELBERT R. FAUST

Allen Mfg. research dir. and works manager

A. F. PRUST

JOHN R. LOWEY

posts at Republic Steel plants

N. J., H. K. Porter Company Inc. He was in Detroit as midwest regional manager.

Samuel W. Chantler joined **Allen Mfg. Co.**, Bloomfield, Conn., as director of research and development; **Elbert R. Faust** joined the firm as works manager. Mr. Chantler previously served Elastic Stop Nut Corp. for 14 years as chief production engineer. For the last three years, Mr. Faust was vice president-manufacturing at Waterman Pen Co.

Universal-Cyclops Steel Corp. appointed **William F. Davenport** metallurgical engineer in its Los Angeles district sales office.

Leonard C. Barr was elected executive vice president of **Gregory Industries Inc.**, Toledo, Ohio.

Joseph F. Wrobel was made sales manager, **F. Jos. Lamb Co.**, Detroit, designer and builder of special machine tools and automation equipment.

A. F. Prust was named chief metallurgist of **Republic Steel Corp.'s** Warren, Ohio, steel plant. He is succeeded as assistant chief metallurgist by **J. E. Cleary. John R. Lowey**, superintendent of the mechanical department, was made general superintendent of the Cleveland district plant.

Steven S. Gordon was elected president, **Republic Gear Co.**, Detroit. He was vice president and general manager.

Vernon H. Olson was elected president, **W. O. Barnes Co. Inc.**, Detroit, to succeed the late **J. Harry Flavell.** Mr. Olson was vice president-sales.

S. S. Kahn was elected vice president, **Parker-Kalon Div.**, General American Transportation Corp., Clifton, N. J. He has been general sales manager since 1953.

Charles W. Wilkins III was made market manager for laboratory and test instrumentation by **Brown Instruments Div.**, Minneapolis-Honeywell Regulator Co., Philadelphia.

William F. Zarbaugh was named vice president-sales, **Steelduct Co.**, Youngstown. He formerly was with Cold Metal Products Co., continuing after it became the strip division of Jones & Laughlin Steel Corp.

William H. Burnett was named assistant to the general superintendent of **United States Steel Corp.'s** Youngstown district works. He is succeeded by **Robert K. McGowen** as division superintendent of blast furnaces.

Wiley B. Ford was made Philadelphia district sales manager, **Erie Forge & Steel Corp.**, Erie, Pa.

Robert J. Hummel was elected a vice president of **Houdaille Industries Inc.**, Buffalo.

M. W. Kellogg Co., New York, subsidiary of Pullman Inc., appointed **Robert Lawrence Jr.** as sales manager, metallurgical and process in-

JOSEPH F. WROBEL

F. Jos. Lamb sales mgr.

S. S. KAHN

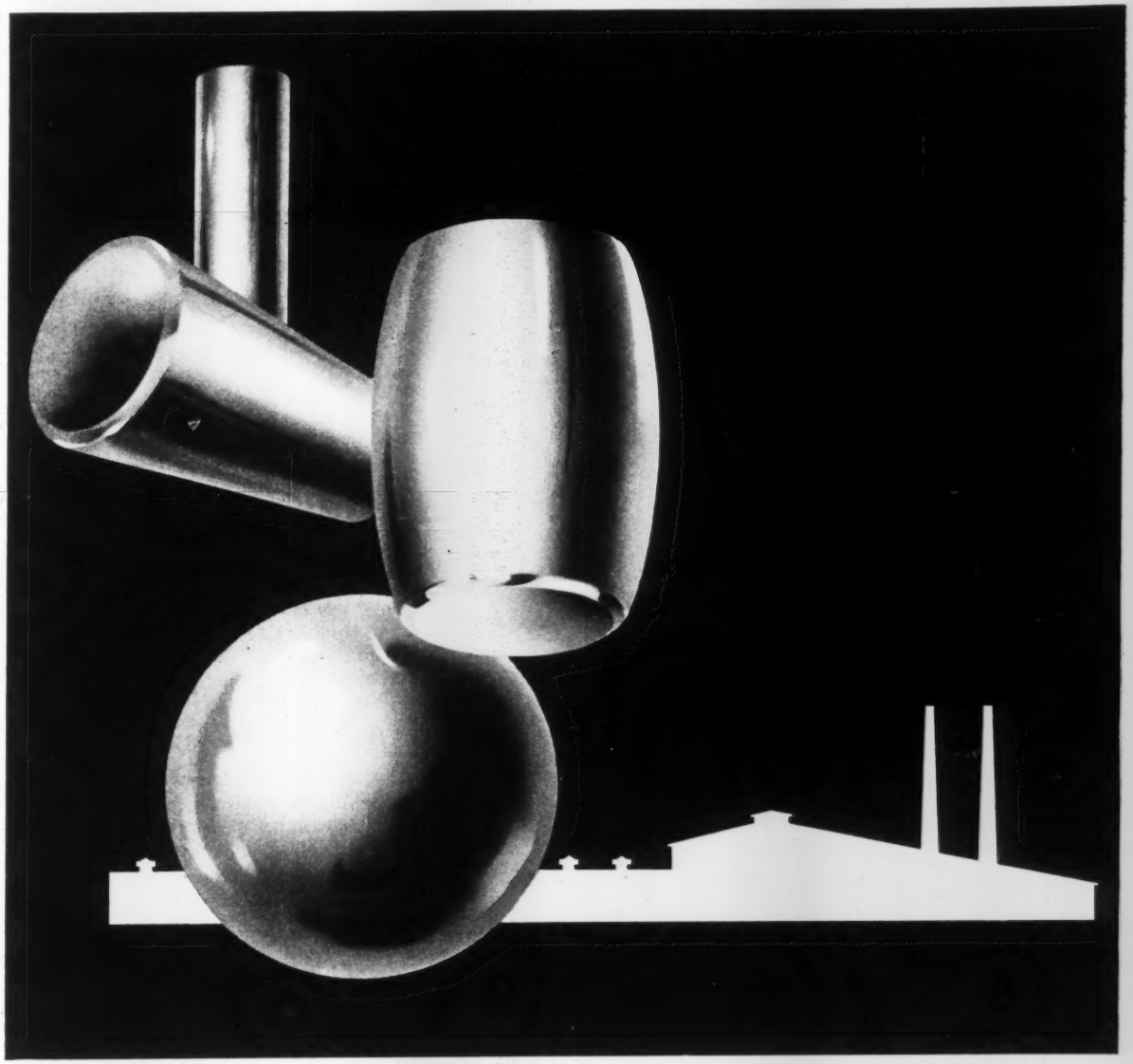
Parker-Kalon vice president

CHARLES W. WILKINS III

M-H unit market mgr.

ROBERT LAWRENCE JR.

M. W. Kellogg post



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Here is one multi-purpose grease that actually performs better than a great many "special purpose" greases for all types and sizes of bearings – even under extreme *pressure*, *temperature* and *moisture* conditions.

Nebula EP retains its outstanding lubricating properties at temperatures above the limits of a number of special heat-resistant greases. But unlike many high-temperature greases, Nebula EP possesses high anti-wear and load-carrying qualities – comparable to those of most specialized extreme-pressure greases. Nebula EP's *constant consistency-temperature characteristics are among its most outstanding features.* And Nebula EP's excellent oxidation stability assures long service and storage life.

Now available in three grades, Nebula EP is well suited to *all* types and sizes of bearings...can be applied by hand packing, grease cup or gun, or through a centralized system. For further information, contact your nearest Esso office in New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, the Carolinas, Tennessee, Arkansas, Louisiana, and the District of Columbia. Or write Esso Standard Oil Company, 15 West 51st Street, New York 19, N. Y.

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PAUL McADAMS
Clark Equipment div. chief eng.

EDWARD L. MAHONEY
Columbus Coated Fabrics post

HENRY A. TOBEY
Timken div. factory mgr.

PETER R. KENT
Channel Master div. sales mgr.

DAVID W. BONNAR
Clearing Tor-Pac sales mgr.

GORDON M. SOMMER
Clearing Machine v. p.

dustries. He heads sales for the company's new sponge iron process.

Peter R. Kent was promoted from district sales manager, aluminum division, **Channel Master Corp.**, Ellenville, N. Y., to sales manager, aluminum and tubular rivet divisions.

Stanley Schneider was made manager of engineering, **Helipot Div.**, Beckman Instruments Inc., Newport Beach, Calif.

William J. Ohrenberger was appointed sales manager, **J. C. Corrigan Co. Inc.**, Boston. **John F. Bertuccio** was appointed to engineering sales development.

Robert T. Morelli was made supervisor of specifications and technical information, metallurgical division, **Crucible Steel Co. of America**, Pittsburgh.

Robert H. Hanson was named Chicago district sales manager, **Milwaukee Boiler Mfg. Co.** He was with U. S. Industries Inc.

David W. Bonnar was appointed sales manager of Torc-Pac presses for **Clearing Machine Corp.**, division of U. S. Industries Inc., Chicago. He was in the Detroit office, where he served as senior sales engineer on major accounts for the corporation.

Gordon M. Sommer was named vice president-engineering for **Clearing Machine Corp.**, division of U. S. Industries Inc., Chicago. He was director of research and development for the last two years, and prior to that was chief engineer at Clearing's Hamilton, Ohio, plant.

Richard C. Atchley was made production control manager, **Hydreco Div.**, New York Air Brake Co., Kalamazoo, Mich. He was production manager with Monarch Machine Tool Co.

Convair Div., General Dynamics Corp., San Diego, Calif., appointed **W. Robert Bruce** chief of subcontracts; **Lon F. Tubbs Jr.**, purchasing agent for high-value items.

Paul McAdams was made chief engineer, construction machinery division, **Clark Equipment Co.**, Benton Harbor, Mich. He was development engineer. **Alvin E. York**, former manager of parts and service for the division, fills the new post of sales manager, with **Wendell V. Richards**, assistant sales manager. **Gust J. Schwanke** succeeds Mr. York as manager of parts and service, with **Ralph H. Hall** as assistant manager.

Edward L. Mahoney was appointed director of sales of **Columbus Coated Fabrics Corp.**'s new vinyl-metal products division, Columbus, Ohio.

Henry A. Tobey was appointed general factory manager, Bearing and Rock Bit Divisions, **Timken Roller Bearing Co.**, Canton, Ohio. He succeeds **H. H. Richey**, recently elected vice president. Mr. Tobey was factory manager of the Canton and Gambrinus bearing factories.

Barclay Morrison was named assistant marketing manager, **Carpenter Steel Co.**, Reading, Pa., and the Alloy Tube Div., Union, N. J.

Joseph F. Hornor was appointed by **Brown Instruments Div.**, Philadelphia, Minneapolis - Honeywell Regulator Co., as market manager for metals producing and ceramic industries.

OBITUARIES...

David T. Bonner, 62, president and chairman, **Dynamics Corp. of America**, Long Island City, N. Y., died Oct. 30.

Roy R. Seward, president, **Central States Bridge & Structural Co.**, Indianapolis, died Oct. 2.

William E. Crawford, 60, retired director of research and engineering, **A. O. Smith Corp.**, Milwaukee, died Oct. 22.

M. Lewis Fox, 29, executive vice president, **Universal Sheet & Strip Steel Co.**, Chicago, died Oct. 23.

Max G. J. Hoffmann, 77, founder and chairman, **Chain-Link Fence Corp.**, Chicago, died Oct. 25.

Donald P. Mullaney, 49, secretary, **Acme Steel Co.**, Riverdale, Ill., died Oct. 25.

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Titusville Forge is a good background for any forging where complete facilities and broad experience assure the finest quality throughout.

Whether your needs are for rough forgings, or the most accurately machined product, you can depend on Titusville Forge to meet your specification exactly.

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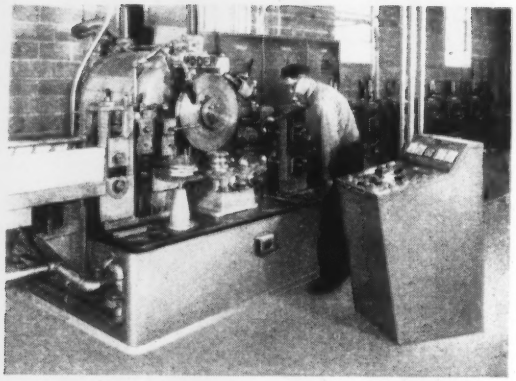
Offices in Principal Cities

The Yoder Company uses Cutler-Hammer Motor Control. Type M electric resistance weld tube mills automatically form cold rolled steel into pipe or tubing at a rate of 35 to 150 feet per minute. Cutler-Hammer Control is provided as standard equipment.



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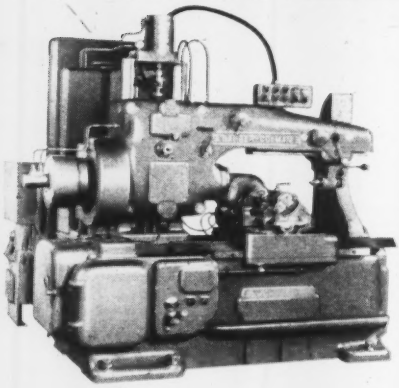
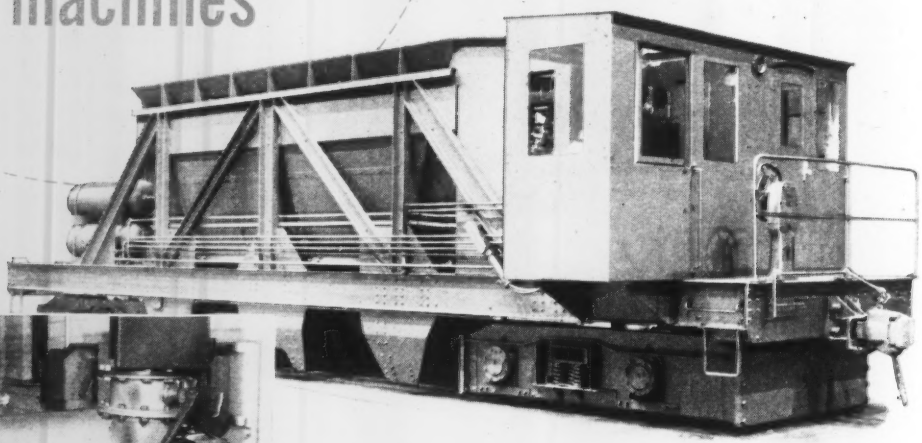
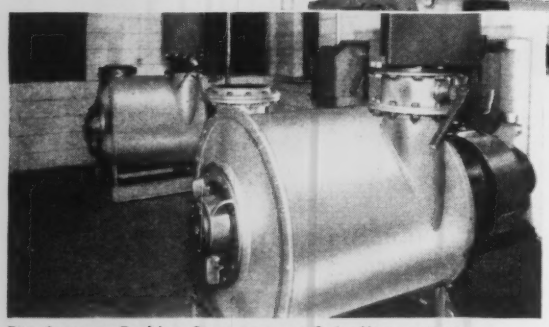
Choice of the leaders ...the mark of better machines



Barber-Colman Company uses Cutler-Hammer Motor Control. The 14-15 production hobbing machine uses Cutler-Hammer Relays as standard equipment.



The Atlas Car & Mfg. Company uses Cutler-Hammer Motor Control. 50 ton, double compartment, bottom dump ore transfer cars are equipped with Cutler-Hammer Control.



The Spencer Turbine Company uses Cutler-Hammer Motor Control. High volume centrifugal blowers provide the air supply for the aeration tanks at a new sewage plant. Cutler-Hammer Motor Control is supplied as standard equipment.

You too will find it pays to use Cutler-Hammer Motor Control; it installs easier, works better, and lasts longer. For detailed information write Dept. W-213. CUTLER-HAMMER Inc., Milwaukee 1, Wisconsin.

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Cutler-Hammer Inc., Milwaukee, Wis. *Division:* **Airborne Instruments Laboratory.** *Foreign:* **Cutler-Hammer International, C. A.**
Associates: Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation, Inc.

Youngstown To Revamp Strip Mill

$50 million to be spent at Campbell Works in two years. Completion will see speeded up 79-in. hot mill rolling larger diameter coils of higher quality strip

LARGER DIAMETER coils of strip (up to 40,000 lb) of higher quality than now is possible will be rolled at faster speeds on Youngstown Sheet & Tube Co.'s 79-in. hot strip mill at the Campbell (Ohio) Works. The mill will be revamped in a two-year program that will cost more than $50 million.

Two downcoilers, to handle larger coils from the hot strip mill, were installed in 1956. At the same time, major producing units of the cold strip mill were revamped to handle larger coils.

In the cold strip mill, temper mills and pickling lines are being altered for the larger diameter coils, and new shearing capacity is being installed. Minor alterations will be made to the Campbell and Brier Hill blooming mills as part of the hot strip project.

• **Construction**—Five new buildings with a total of 210,000 sq ft of floor space will be erected. These will be: New slabyard building equipped with two 80-ton cranes, roll and bearing shop equipped with one 100-ton crane, mill building extension equipped with a new 100-ton crane, motorroom extension equipped with a 35-ton crane, and slabyard extension.

Three large slab heating furnaces will be installed along with a new roughing section and a new crop shear. New power units will be installed on the present finishing section.

• **Quality Heating**—The slab heating furnaces will incorporate five zones of heating control to assure quality heating. Maximum slab sizes will be 26 ft long and 9½ in. thick, compared with the present maximum of 16½ ft long and 4¾ in. thick.

• **Fast Operation**—The roughing section will employ a six-stand roughing train, compared with four stands at present. Company officials say it will have the largest total connected horsepower (33,000) of any roughing mill in the U. S. Roughing speed will be increased from 1400 to 2250 fpm. Automatic electronic equipment will be installed to assure gage and width control.

It is also claimed that the finishing section, with 33,500 hp, will have the largest total horsepower (main drive) capacity of any finishing section in the steel industry. Coil transfer equipment will be installed to convey the larger coils from the downcoilers to the coil storageyard.

• **Material Needs**—The project will require 5750 tons of structural steel; 175,000 ft of bearing pile; 2000 tons of concrete reinforcing rods; and about 39,000 cu yd of concrete.

A. S. Glossbrenner, president, describes the project as "the biggest single development in the district's industrial growth." He says it "reaffirms our faith in the future of the steel business as well as in Youngstown as a steel producing district."

A contract for mechanical facilities has been awarded to United Engineering & Foundry Co., Pittsburgh. Some minor construction contracts also have been let, but some major electrical contracts remain to be awarded.

Forms Diecasting Firm

A new commercial zinc and aluminum diecasting company has been organized under the name of Hartzell Mfg. Inc., 2516 Wabash Ave., St. Paul, Minn. It combines three St. Paul firms which were previously in the diecasting field: Lloyd Products Inc. (aluminum and zinc diecastings), Mitee Mfg. Co. (machiner and finisher of castings), and Production Engineering Co. (tool and die shop for building diecast tools).

Key personnel are: President, T. S. Hartzell; secretary, J. R. Hartzell; executive vice president and general manager, J. T. Walker; vice president and director of sales, M. J. Laub; comptroller, Paul Schaeppi; industrial engineer, Del L. Brink;

(*Please turn to Page* 106)

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PLUS
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Each day, our engineers suggest slight changes which eliminate higher tooling costs or additional operations on our customers' stampings.

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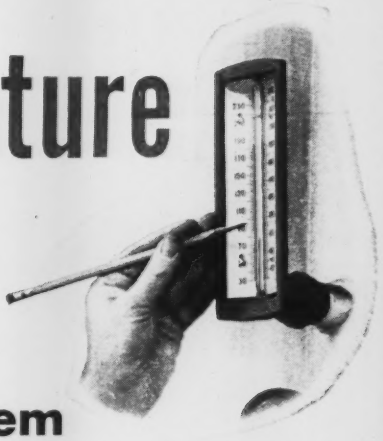
DETROIT STAMPING COMPANY
Established 1915
359 Midland Ave., Detroit, Mich.
"America's Leading Job Stamping Manufacturer"

Look to Detroit!

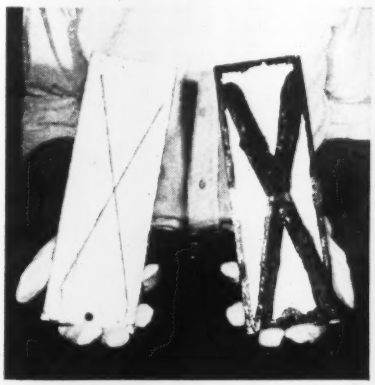
Read the Temperature and SAVE!



New Cold Bonderite System Cuts Heat Costs Up to 70%

The temperature gauges on the input lines of a typical Cold Bonderite System installation tell the story. 40° to 75° cooler in cleaner, rinse and Bonderite than in the conventional hot phosphating installation.

And all that heat saved translates into dollars saved, because chemical costs are comparable, as is the effective protection of the coatings produced.



Salt spray tests show effectiveness of coatings produced by Cold Bonderite System.

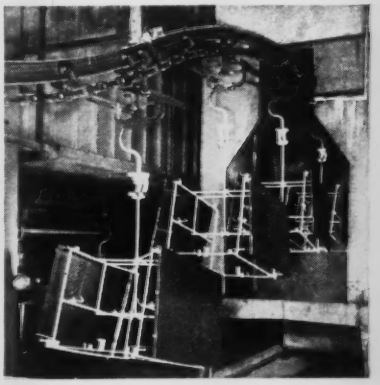
This is a thoroughly tested and proven system. The Cold Bonderite System is in use right now in many plants in many industries. And more are changing to it as they hear about the spectacular savings.

- A large automotive plant reports savings at the rate of 40 carloads of coal per year.
- An appliance manufacturer says the Cold Bonderite System is saving 5¢ per cabinet.
- Another manufacturer shut down one of his boilers because of reduced heat requirements.
- An automotive plant is saving about 12¢ per body.

There are other operational savings besides heat when you use the Cold Bonderite System. You'll use about 25% less water. You'll save electricity because you won't need to run an exhaust fan. You'll save on maintenance. You'll cut down-time, since there's no waiting for cool-off should service be required.

There are so many benefits and advantages to the new Cold Bonderite System that you can't afford not to investigate it for *your* plant.

Call or write today!



Parker quality and Parker dependability mean that your production lines will roll steadily and efficiently.

PARKER RUST PROOF COMPANY
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BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

Since 1914— leader in the field

*Bonderite, Bonderlube, Parco, Parco Lubrite—Reg. U.S. Pat. Off.

PETERSON STEELS, INC.

Union, New Jersey • Detroit, Michigan • Chicago, Illinois

(Concluded from Page 103)

toolroom superintendent, William Reich Jr.; and diecast supervisor, Ednor Kohn.

Acquires Product Line

Midland-Ross Corp., Cleveland, acquired from Consolidated Metal Products Corp., Albany, N. Y., a line of electrically and pneumatically actuated door operating mechanisms. Production will be transferred to the Owosso (Mich.) Div. plant (air compressors and control devices).

Foundries Specialize

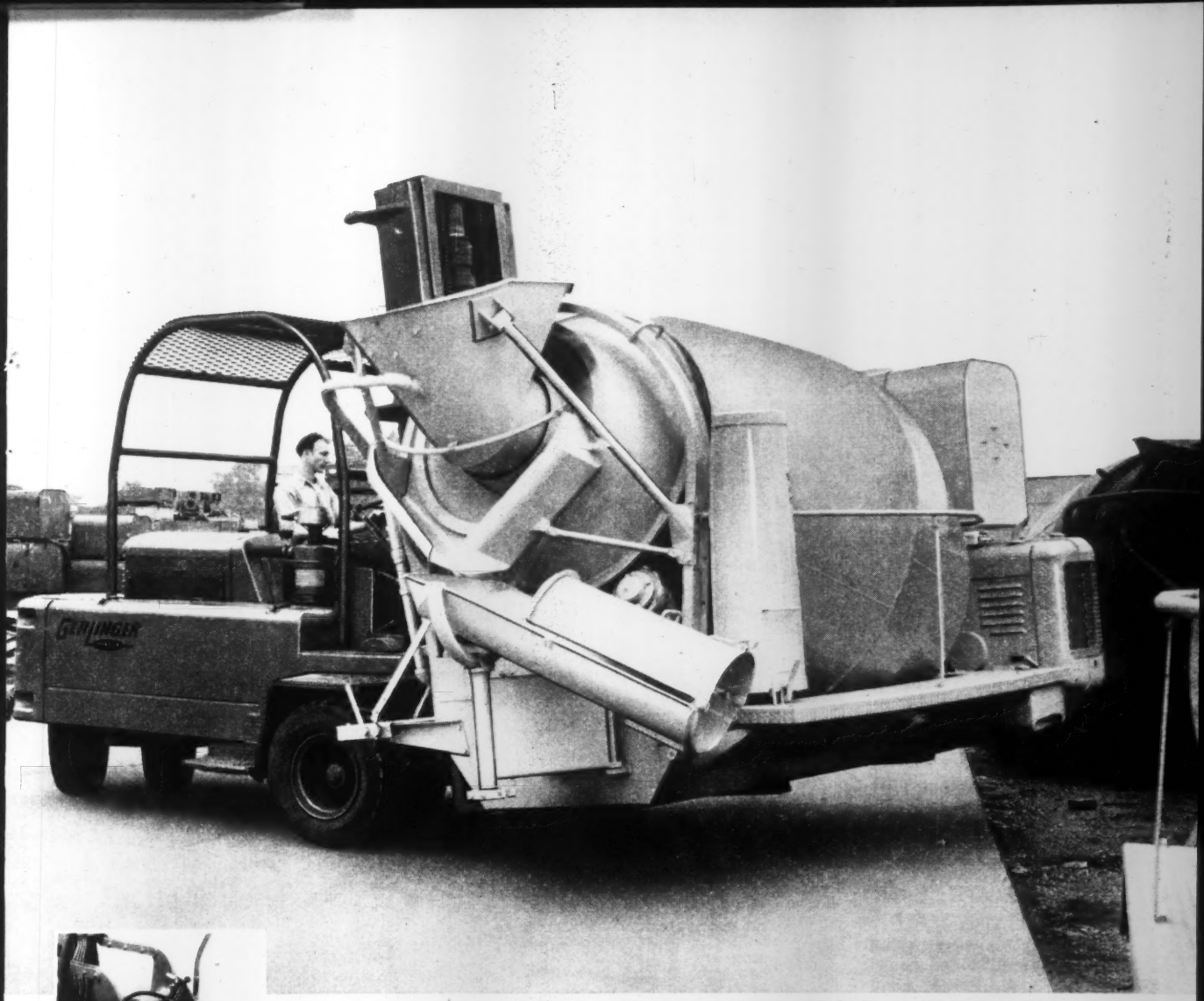
Consolidated Foundries & Mfg. Corp., Chicago, has established a closer working relationship between two of its operating divisions, producers of precision investment castings. Castings Engineers Inc., Chicago, will devote its full facilities to the production of industrial type components, while Misco Precision Casting Co., Whitehall, Mich., will broaden its present coverage of investment cast parts for the aviation industry.

Allen Mfg. Opens Plant

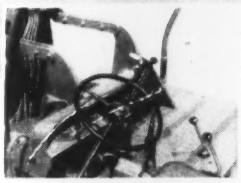
Allen Mfg. Co., producer of hex-socket cap screws and setscrews, and related products, formally opened its new main office and manufacturing plant at Bloomfield, Conn. The property comprises a 25,000 sq ft factory section, a 20,000 sq ft office building, and a glass-enclosed corridor between the two. The corridor serves also as the plant's main entrance.

U. S. Drill Head Expands

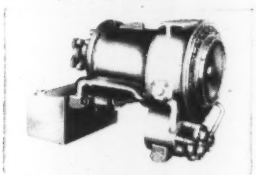
United States Drill Head Co. completed the second phase of a building program with the opening of an 11,000 sq ft structure at 5298 River Rd., Cincinnati. It will accommodate the Standard Pattern Div. The first phase, completed a year ago, was a 7000 sq ft plant which houses the company's aluminum, brass, and bronze foundry. The two plants are supervised by John Lang, vice president and general manager of the division. A third building of about 45,000 sq ft will be erected to house the Machine Tool Div. The program will cost



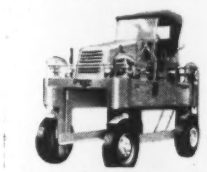
Today's industries need Gerlinger Continuous Operation



Gerlinger Fingertip Control makes this powerful lift truck simple and easy to operate. Motive, hoist and tilt levers are located within reach of operator's right hand.



Gerlinger Torqmatic Drive safeguards engine from damaging shocks, prevents stalling, eliminates gearshift guess and lessens driver fatigue. Extra operating ease is assured when Gerlinger Power Steering is added.



Gerlinger Material Carriers up to 30 tons capacity handle the biggest jobs you have. Straddling I-beams, pipe, slabs and huge pallet loads of materials, they are extremely versatile.

How would it get there without this Gerlinger?

Moving 10,000-pound mixers more than a hundred yards from production to storage posed a few cost and manpower problems for this metalworking plant. They were solved with a Gerlinger Model S-15 Fork Lift Truck rather than erect extensive conveying equipment.

Now one man speeds the mixers from factory to storage on Gerlinger standard forks. $7\frac{1}{2}$-ton lift capacity makes it a powerful mass-handler for all types of plants. Its pivotal steering, counter-active weight distribution and positive fingertip controls make this unit—like all Gerlinger lift trucks—as easy to maneuver as your family car.

New data folders are available to show you many ways to benefit with Gerlinger equipment. Send coupon for the specs most widely used in the metalworking industry.

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Company_____

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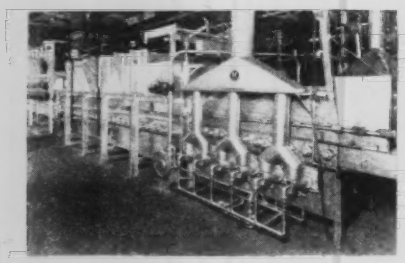
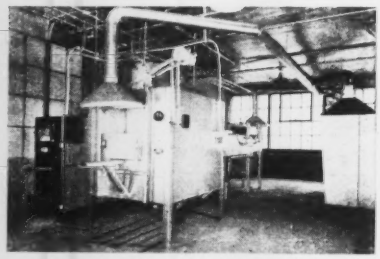
Mail to **GERLINGER CARRIER CO.**, Dallas, Oregon

EF FURNACES *for Sintering* Metal Powder Products



A large capacity EF combination gas fired radiant tube and electrically heated roller hearth type furnace for sintering metal powder parts at temperatures up to 2050° F.



A comparatively small EF hand operated pusher type electric furnace suitable for experimental work and small production runs on both ferrous and non-ferrous products.

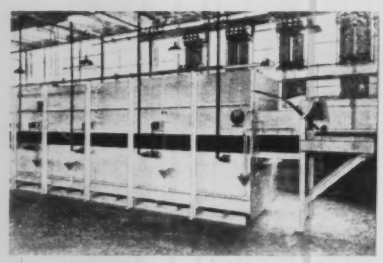
EF furnaces for processing ferrous and non-ferrous powder products assure:

- **lowest cost per pound for the sintering operation.**
- **maximum uniformity of size for the sintered products.**
- **maximum pounds of quality product per dollar invested.**

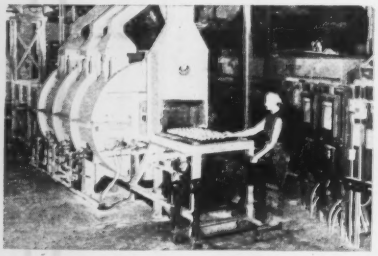
Long experience with special atmospheres, metal powders, bonding powder to strip and all heat processing phases connected with powder metallurgy has enabled EF engineers to develop and install equipment for producing some rather outstanding results.

With our extensive experience and complete manufacturing facilities we are in position to build the size and type equipment to best suit your specific requirements.

We would like to discuss some of our latest furnace developments with you, if interested.



Fusing metal powder to strip. Metal powder is being fused on six separate strands of strip, simultaneously and continuously, in this EF roller hearth type furnace.



An EF gas fired muffle type continuous furnace — another of the numerous types we build for sintering non-ferrous and iron powder products at various temperatures.

EF **BULLETIN No. 461**

shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.

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GAS FIRED OIL-FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION *Salem - Ohio*

Canadian Associates • CANEFCO, LIMITED • Toronto 13, Canada

about $750,000, not including any new machinery which may be purchased at completion of the building projects. The company makes fixed center and adjustable multiple spindle drilling and tapping heads.

Stearns Buys Foundry Plant

E. C. Stearns & Co. Inc., Syracuse, N. Y., maker of power lawn mowers, purchased the S. Cheney & Son foundry plant at Manlius, N. Y. An extensive renovation program is scheduled to be completed by Dec. 1.

Expands Melting Facilities

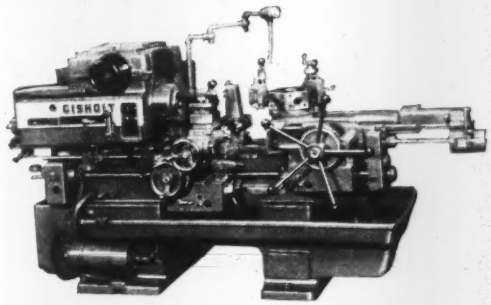
Bridgeport Rolling Mills Co., Bridgeport, Conn., installed a Lindberg-Fisher gas-fired melting furnace as part of its modernization program. The new furnace will provide additional melting facilities for casting experimental alloys, standard copper and aluminum alloys; for casting aluminum and copper alloys on the company's Hazelett continuous casting machine; and for casting special alloys in small quantities. The new furnace also will be used as a priming facility for the company's low frequency electric induction furnaces.

Widens Research Efforts

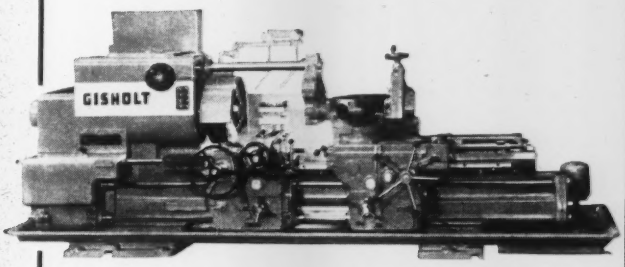
American Metal Products Co., Detroit, has formed an Engineering Science Div. to research, develop, and engineer the production of new materials for nuclear applications, missiles, and space vehicles. Frederick C. Matthaei Jr., vice president of research and development, will supervise the division which has its own laboratory building at 1355 N. Main St., Ann Arbor, Mich. Dr. H. A. Ohlgren is director of the division; Dr. J. G. Lewis assistant director.

SPS Forms Nuclear Unit

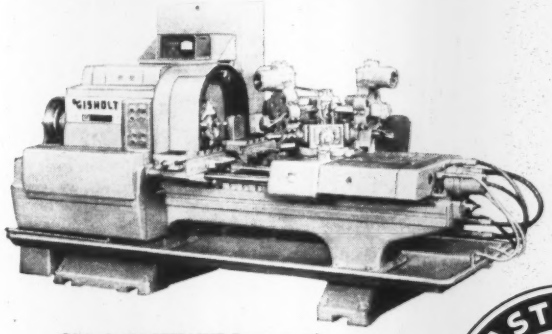
A Nuclear Components Div. has been formed by Standard Pressed Steel Co., Jenkintown, Pa. It will produce complex precision metal parts for the nuclear industries and is an outgrowth of the Precision Stud Div. which was established to make special threaded parts primarily for the power producing industry. The division is headed by Joseph P. Villo, manager, assisted



Gisholt MASTERLINE Universal Ram Type Turret Lathe

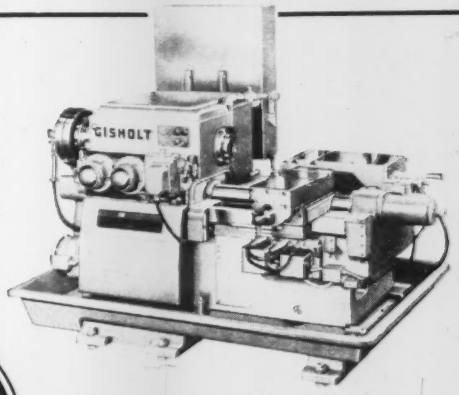


Gisholt MASTERLINE Saddle Type Turret Lathe

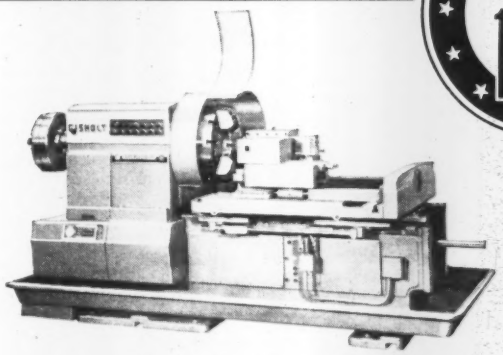


Gisholt MASTERLINE Fastermatic Automatic Turret Lathe

MASTERLINE
GISHOLT SINCE 1887

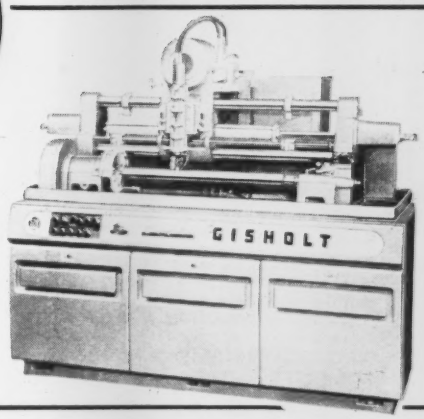


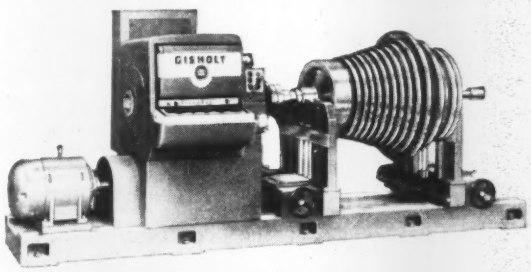
Gisholt MASTERLINE No. 12 Automatic Lathe



Gisholt MASTERLINE Simplimatic Automatic Lathe

Gisholt MASTERLINE Superfinishing Machine





Gisholt MASTERLINE Balancing Machine

The illustrations on this page show the seven basic lines built by the Gisholt Machine Company. A General Catalog, Form 1126-K, with complete specifications and basic information on the Gisholt MASTERLINE Machines, is available on request. Direct your inquiry to:

GISHOLT MACHINE COMPANY
1217 East Washington Ave., Madison 10, Wis.

facts about LEDLOY* FREE-MACHINING STEELS

Considerations in the Use of Inland Ledloy Steels to Reduce Machining Costs*

"Most metalworking plants strive to trim costs as well as metal—so long as quality standards can be maintained. But it takes a lot of ingenuity and 'know how' to neatly balance all three factors: costs, machining efficiency and quality."**

INLAND LEDLOY free-machining steels should be thoroughly investigated in efforts to achieve this end.

You should consider LEDLOY STEELS . . .
. . . if you are presently producing a product from regular carbon steel that requires machining.

The Inland process of adding lead to any grade of steel phenomenally improves machinability without materially affecting other properties. The normally specified physical properties required for a particular application are retained in the equivalent Ledloy Steels. The only characteristic that is affected, and to a marked degree, is the steel's machinability.

Forgings made from Ledloy, for example, can be heat treated and forged in exactly the same manner as similar non-leaded grades of open hearth steels, yet will machine up to 50% faster. A switch to Ledloy for forgings will also result in a superior finish on the machined part.

Whatever grade of steel you are currently using for your products, if machining is an important part of your fabricating process, a change to a similar Ledloy grade can cut your total machining costs appreciably.

You should consider LEDLOY STEELS . . .
. . . if you are presently using a non-leaded machine stock.

Ledloy Grade A, the most widely used leaded steel grade, machines from 25% to 55% faster than regular free-machining steels and yet retains all the desirable characteristics of the non-leaded grade of comparable base analysis.

The precise quality control measures used by Inland in the production of Ledloy Steels result in a surface that is superior to similar non-leaded machining steels. Tolerance control is easier and the completed part has a finer, smoother finish.

You should consider LEDLOY STEELS . . .
. . . if you are presently machining parts from free-machining brass.

Ledloy Grade B, a steel that is somewhat more costly than Grade A, has been used successfully as a substitute for free-machining brass in a number of applications. The basic material cost of Ledloy Grade B is only about half as expensive as brass, yet approaches brass in machinability. However, the higher scrap return on brass, over leaded steels, must be considered in estimating overall cost savings.

If machinability rather than corrosion resistance or non-magnetic properties is the primary reason for the use of brass in a given application, Ledloy Grade B should be seriously considered for its cost-saving advantages. Because leaded steels weigh less than brass, they yield more parts per pound. Then, too, the greater strength of leaded steels often makes possible the redesigning of a machined part to obtain material savings with no loss of strength.

GENERAL CONSIDERATIONS

1. **Amount of Machining.** Ledloy Steels were developed by Inland to provide a more efficient machining steel. The advantages of their use are in direct proportion to the amount of machining performed on parts made from them. The greater the amount of machining, the greater the possible savings using Inland Ledloy Steels.
2. **Capacity of Equipment.** If your present equipment is not being run at full speeds or feeds, considerable savings can result by using Ledloy grades and taking advantage of their much greater machining rate. Increased speeds and feeds are possible, and with reduced tool wear.
3. **Surface Finish.** If finish is important in the machined product, Ledloy Steels can be beneficial. The superior finish resulting from the use of Ledloy Steels has made possible the elimination or reduction of costly additional processing in a number of applications.
4. **Tool Life.** If the machining operation wears tools excessively, necessitating frequent changes, or if tool cost is relatively high, Ledloy Steels can effect significant savings. Because of its lower friction component, plus the fact that Ledloy provides better chip formation, tool-edge build-up is cut to a minimum when machining Ledloy steels. Ledloy Steels actually lubricate the tool face, reducing heat generated and minimizing tool wear. This means greater production per tool change and decreased costs.

Many grades available—Inland Ledloy free-machining steels are available in a wide range of standard carbon and alloy grades in bar form. Ledloy free-machining plates are also produced.

If your product requires machining, it will pay you to get all the details on Inland Ledloy . . . the original leaded steels. Ask your cold-drawer about them today, or write Inland Steel Company, 30 West Monroe Street, Chicago 3, Illinois, for the interesting booklet, "Properties of Inland Ledloy Steels."

***Iron Age Special Feature #10, July 25, 1957. "How to Get More for Your Metalworking Dollar" (Machining Ferrous Metals)*

INLAND STEEL

Sales Offices: Chicago · Milwaukee · St. Paul · Davenport
St. Louis · Kansas City · Indianapolis · Detroit · New York

INLAND

Ledloy Steels
the world's most machinable
*Reg. Trade Mark

by Walter Hambrecht. Harold Hafer Sr. is chief sales engineer and Herman Benninghoff is supervisor of the reliability and quality section.

NEW ADDRESSES

Lundquist Tool & Mfg. Co. Inc. moved its plant to 677 Cambridge St., Worcester, Mass.

Lee Donnelley Co. moved to enlarged offices at 802 1900 Bldg., Euclid Avenue, Cleveland 15, Ohio.

ASSOCIATIONS

Foundry Equipment Manufacturers Association Inc., Washington, elected these officers: President, Gordon E. Seavoy, Whiting Corp., Harvey, Ill.; first vice president, E. A. Borch, National Metal Abrasive Co., Cleveland; second vice president, R. A. Brackett, Spencer Turbine Co., Hartford, Conn.; and executive secretary-treasurer, C. R. Heller.

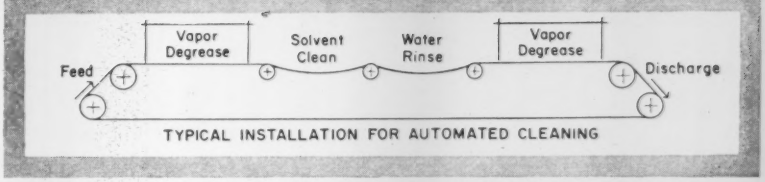
Charles W. Ireland, Vulcan Materials Co., Birmingham, was elected president of the **National Slag Association,** Washington. Other officers are: Vice president, H. N. Snyder, Buffalo Slag Co., Buffalo, N. Y.; managing director, E. W. Bowman; and treasurer, W. S. Shaw.

A new trade organization, **National Institute of Jig & Fixture Component Manufacturers,** has been formed. Officers are: President, E. W. Bergmann, Monroe Engineering Products Inc., Monroe, Mich.; vice president, John Burke, West Point Mfg. Co., Detroit; and secretary-treasurer, Harold Wrigley, Vlier Engineering Corp., Los Angeles.

National Lubricating Grease Institute, Kansas City, Mo., elected these officers: President, F. E. Rosenstiehl, The Texas Co., New York; vice president, H. A. Mayor Jr., Southwest Grease & Oil Co., Wichita, Kans.; secretary, Dr. J. V. Starr, Esso Standard Oil Co., New York; and treasurer, A. J. Daniel,

(*Please turn to Page* 114)

Cambridge WOVEN WIRE BELTS



TYPICAL INSTALLATION FOR AUTOMATED CLEANING

Open mesh assures product uniformity in continuous processing

Cambridge Woven Wire Belts provide thorough, uniform degreasing or washing because cleaning solutions and vapors circulate freely *through* the open mesh of the belt to reach all parts of the product. In one continuous operation, parts can be carried through a degreasing, rinse, degreasing cycle to maintain capacity production. In heat treating, brazing, annealing and quenching operations too, Cambridge belts cut operating costs and increase production. Here's why:

CONTINUOUSLY MOVING BELT ELIMINATES BATCH PROCESSING for faster, more economical production.

ALL-METAL CONSTRUCTION RESISTS CORROSION, HEAT; takes temperatures up to 2100° F.; has no seams, lacers or fasteners to weaken or break.

OPEN MESH ALLOWS RAPID DRAINAGE of process solutions; assures thorough immersion of product.

SPECIAL CROSS FLIGHTS OR RAISED EDGES are available to hold product on belt during inclined movement.

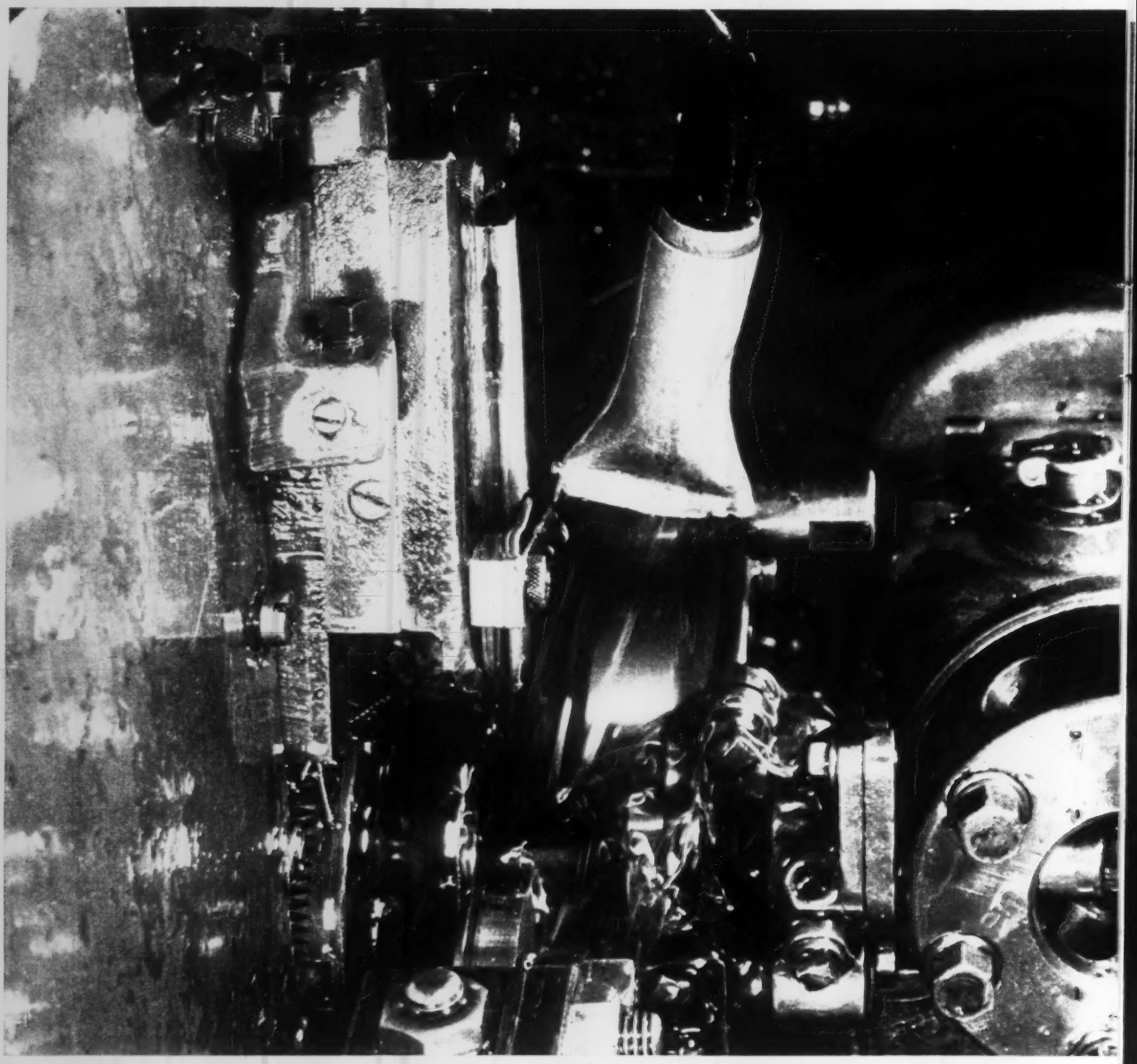
Talk to your Cambridge FIELD ENGINEER soon — he'll explain the many advantages of continuous heat treating on Cambridge belts. And, he'll recommend the belt size, mesh or weave — in the metal or alloy — best suited to your operations. You'll find his name in the classified phone book under "BELTING, MECHANICAL". Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

Department J, Cambridge 11, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES



Tries many other cutting oils, but sticks with Gulfcut for

GULF MAKES THINGS

"Some people buy, or mix, specialty cutting oils in the hope of working miracles. We've tried the 'miracle-workers'—but we get best results with Gulfcut cutting oils, and have stuck with them for over 15 years."

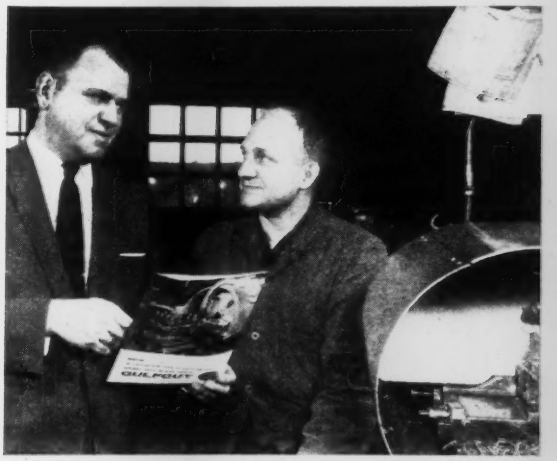
That's the report from Steven Kowaleski, a partner in Tyler Automatics, Inc. of Thomaston, Connecticut—for many years, successful manufacturers of precision parts for the electronics, automotive and aircraft industries.

The machinists at Tyler Automatics know that Gulf makes things run better, especially in their cutting jobs on stainless steel and Inconel.

"We get longer chips when machining 303 Stainless with Gulfcut," says Mr. Kowaleski. "This means more heat is being carried away from the cutting edge of the tool. We get less heat and friction, and our tool edges stay sharp longer.

"We've been using Gulfcut oils since 1943. If we have machining problems we know we can call on Gulf and

Above, a corner of Tyler Automatics' plant, showing a row of Brown & Sharpe 00G automatic screw machines. At left, a close-up of one of these machines in operation with Gulfcut 45B. Work piece is a one inch, 303 stainless steel pin, of $\frac{5}{16}$" round stock. Depth of cut: .250". Feed: .007" per rev. Speed: Machine—1492 rpm. Cycle—20 sec. Tolerance: ±.001". Finish: 100 micro-inch.



Steven Kowaleski, right, of Tyler Automatics, Inc. checks his cutting oil needs with Joseph Reynolds, Gulf Sales Engineer. Tyler Automatics uses Gulfcut 45B and 31C in machining high quality precision parts.

15 years . . . because

RUN BETTER!

get the help we need. Gulfcut oils really do the job."

In the complete Gulfcut line there's a performance proved cutting oil to meet each specific requirement in your shop. A Gulf Sales Engineer will help you in your selection—call him at your nearest Gulf office.

New—Gulfcut Heavy Duty Soluble Oil, a superior emulsifying cutting oil that is setting new performance records in scores of machine shops. Send the coupon for literature on this outstanding development.

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

Send me illustrated bulletin on
Gulfcut Heavy Duty Soluble Oil

Name_____

Title_____

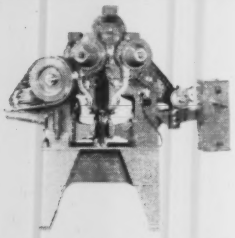
Company_____

Address_____

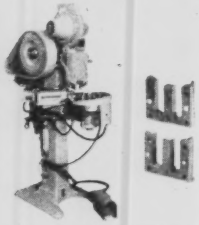
City_____ Zone____ State_____

SM-0076

Speed up
RIVETING and CLINCHING
Automatic feeding and setting with
T-J



RIVETS 4 AT A TIME! Special quadruple riveting unit, incorporating two Model "RR" Twin Rivitors, mounted on a special welded steel base. Equipped with air-operated hold down mechanism and a safety air trip arrangement. Tooled for riveting left hand and right hand automotive muffler bracket assemblies.



SPECIAL TWIN RIVITOR! Tooled for 6 station indexing fixture, incorporating automatic clamping and ejecting mechanisms, for riveting laminated armature assemblies.

T-J CLINCHOR adapted to a wide range of clinch nut setting problems. Gravity Feed model shown here.

You'll realize *faster assembly . . . reduced labor costs* immediately, when you use T-J Rivitors and Clinchors for your production line. These performance-proved machines are designed to do a wide range of assembly jobs for aircraft, automotive, farm machinery—riveting jobs of *all* kinds.

T-J RIVITORS automatically feed and set solid rivets with high production. Electrically powered Rivitor sets solid steel rivets up to ⅞" long. Throat depths 8" to 36".

T-J CLINCHORS set clinch nuts with fully automatic operation, controlled by a single foot pedal. Available in Underfeed and Gravity Feed models, throat depths 8" to 36".

Send today for these helpful references: Rivitor bulletins 646 and 555 . . . Clinchor bulletin 555. The Tomkins-Johnson Co., Jackson, Mich.

T-J TOMKINS-JOHNSON
RIVITORS. AIR AND HYDRAULIC CYLINDERS. CUTTERS. CLINCHORS

(*Concluded from Page 111*)

Battenfeld Grease & Oil Co., Kansas City. General manager of NLGI is T. W. H. Miller.

NEW OFFICES

Michigan Seamless Tube Co., South Lyon, Mich., opened a sales office at 2617 W. Peterson, Chicago 45, Ill. Bruce M. Robinson is manager of the new facility.

Delta-Star Electric Div., H. K. Porter Company Inc., Chicago, opened a district office at 925 Securities Bldg., Third Avenue and Stewart Street, Seattle 1, Wash. District manager is R. E. Willis.

The Export Dept., Eastern Stainless Steel Corp., has occupied new quarters at 150 E. 42nd St., New York (the building has stainless curtain walls), and will share Suite 448 with the New York sales staff of Industrial Stainless Steels Inc., Eastern's marketing subsidiary. Export manager is Jay L. Taft.

CONSOLIDATIONS

Merger of **Mayhew Machine Co. Inc.** and **Mayhew Supply Co. Inc.**, both of Dallas, with **Gardner-Denver Co.**, Quincy, Ill., is expected to be effective about Dec. 1. Mayhew Machine produces drilling equipment for the oil and mining industries. Gardner-Denver makes equipment for the petroleum, mining, construction, and manufacturing industries.

Dover Mfg. Co., Independence, Mo., merged with **J. F. Pritchard & Co. of California**, Kansas City, Mo. Officers of the new organization, maker of cooling towers, are: President, J. F. Pritchard Jr.; executive vice president, K. E. Johnson; and secretary-treasurer, P. S. Lyon.

Pioneer Engineering & Mfg. Co. Inc. purchased **Wettlaufer Engineering Corp.** and will operate the property as a division. Both are in Detroit. Pioneer has majored in product design and development, manufacturing cost studies, and product engineering.

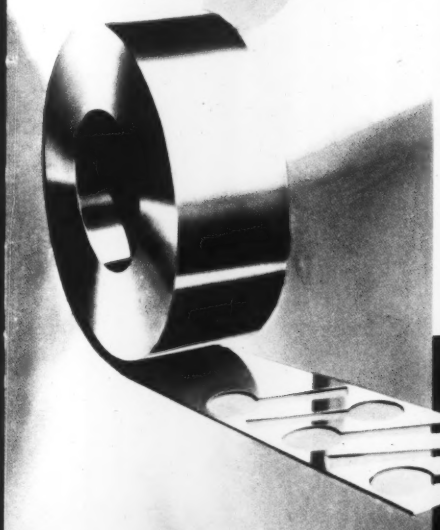
Legendary Beauty

with the carefree luster and practicality of solid

Superior Stainless

STRIP STEELS

With fine American-made flatware made of Superior Stainless Strip Steel, you enjoy the soft highlights and satin-smooth finish that are traditional in finest table services . . . plus the hard, tough, mar-resistant strength of quality stainless steel, good for generations of everyday use! Superior Stainless meets the standards of America's foremost tableware fabricators. *Let us check with you on your own special needs.*



Superior Steel

DIVISION OF

COPPERWELD STEEL COMPANY

CARNEGIE, PENNSYLVANIA

For Export: Copperweld Steel International Company, New York

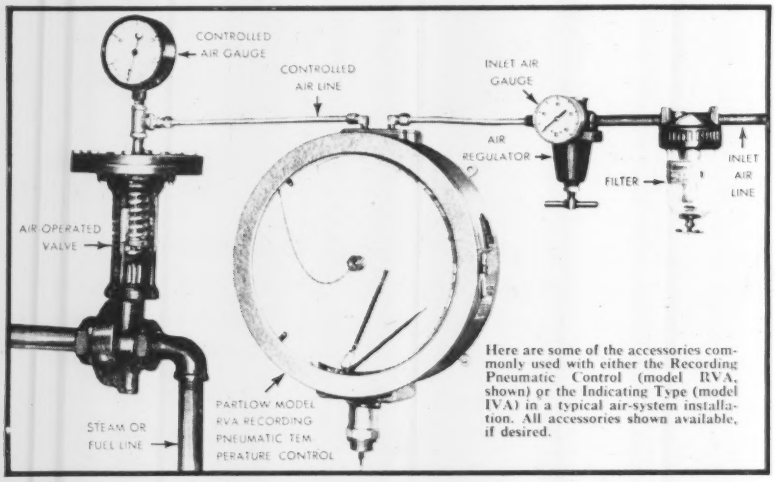
The stainless steel flatware illustrated is produced by ONEIDA, LTD., Oneida, New York

Introducing . . .

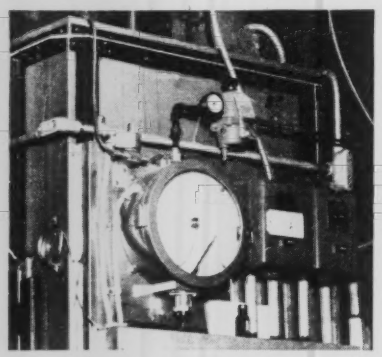
the NEW Partlow Pneumatic Control

New from Partlow . . . throttling-type pneumatic controls engineered to function with extreme accuracy, and sensitivity, under virtually *any* operating conditions.

Actuated as they are by the powerful, direct action of mercury, the Partlow pneumatics actually contain *fewer parts than any other pneumatic control on the market* . . . one reason why they're . . . . **Simpler to install • Simpler to maintain • Simpler to operate • Simpler to replace • and longer lasting, too.**

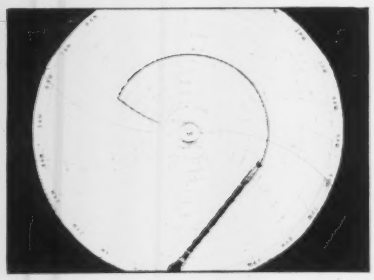


Here are some of the accessories commonly used with either the Recording Pneumatic Control (model RVA, shown) or the Indicating Type (model IVA) in a typical air-system installation. All accessories shown available, if desired.



MODEL RVA

Pneumatic Recording control, installed on new steam-heated cross-flow dryer built by Lydon Bros., Hackensack, N. J.



INSTANT RESPONSE

to temperature changes is a key feature of the Partlow pneumatic. Built-in bulb sensitivity teamed with advanced mechanism design means a minimum of saw-toothing on start-up and a fine line of control when the instrument has reached its throttling equilibrium.

OUTSTANDING FOR ACCURACY, SENSITIVITY AND FLEXIBILITY

The new Partlow pneumatic controls are accurate to within 1% of scale in any one of 10 ranges from −30° to 1100° F. *Exceptionally sensitive too* . . . providing positive, hair-trigger response even to fractional changes in temperature. *And flexible* . . . with throttling range adjustable anywhere from 3 to 20% of scale range.

COST LESS TO OWN AND OPERATE . . CUT "DOWN TIME" TO A MINIMUM!

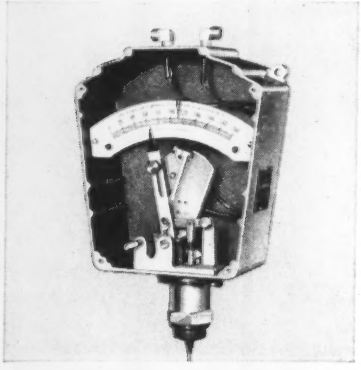
Because they contain fewer parts, Partlow pneumatic controls cost less to buy: next to nothing to operate and maintain. *All elements of the same range are interchangeable*, which means they can be replaced right on the job instead of back in the factory . . . 'Down time' is reduced to a matter of minutes. And no expensive inventory of spare parts or spare instruments is ever required.

IDEAL FOR HAZARDOUS OR 'SHOCK' LOCATIONS!

There are no delicate electronic tubes or gadgets in the Partlow pneumatic to get out of kilter, or possibly trigger an explosion. Its ruggedly simple internal mechanism is virtually shock-and vibration-proof . . provides maximum resistance to moisture, fumes, acid and all types of corrosion. Long-life and trouble-free performance are hallmarks of the pneumatics, as they are of all Partlow controls.

EXCEPTIONALLY VERSATILE TOO!

Both pneumatics—the Recording and the Indicating models—can be used in systems regulating the flow of steam, water or gas . . . or controlling other air-operated devices. Whatever the nature of the heating appliance it actuates, the chances are there's a Partlow pneumatic control to fit your requirements dependably . . . economically . . . *precisely*.



MODEL IVA (interior view)

New Partlow Pneumatic Indicating Control, with throttling range adjustable from 3 to 20%.

SEND US YOUR SPECIFICATIONS

Ask today for a control recommendation tailored for your specific requirements. Of course, if desired, you may field-test this superb new control without cost or obligation. For details write, wire or phone Dept. S-1158.

The Partlow Corp., New Hartford, N. Y.

You can pay more but you can't buy better than

PARTLOW

TEMPERATURE CONTROLS

Technical Outlook

November 10, 1958

SPRAY-ON TEFLON— If you're looking for a durable, corrosion-resistant coating that can be applied and cured rapidly, the new sprayable tetrafluoroethylene (Teflon) resins may be the answer. They can be used to coat machinery, molds, drums, extrusion dies, gaskets, bearings, conveyors, and similar equipment. Besides their lubricating qualities, they eliminate a collection of dirt, excessive grease, and corrosive elements. Developed by Acheson Colloids Co., Port Huron, Mich., the dispersions are available in two formulations: Emralon 310, which contains a phenolic binder and can be cured in 1 hour at 300° F, and Emralon 320, which is air drying.

FILMS INDICATE CORROSION— A study of metal film corrosion discloses the important role of the adsorbed gas layer normally present on glass substrates. The layer furnishes the oxygen necessary for iron oxide particles to form at random. They become elements of electrolytic cells and oxidation proceeds by electrochemical action. Observations show that corrosion rates of iron films can be varied under certain conditions by controlling the adsorbed gas layer and by the introduction of cathodic particles (as oxides or small amounts of a more electrically positive material).

INHIBITING PAPERS ENDORSED— VCI (volatile corrosion inhibitor) papers for preserving ferrous metal items having rubber fabrications as integral parts have been recommended as the result of a study, says R. L. LeMar of the Army's Rock Island Arsenal. Commercial VCI papers were found to have less effects on rubber than most oils. The effects were determined by analysis of the swelling, elongation, and tensile properties of the rubber.

PROTON BOUNCER— A new method of surface examination has been developed by Stanford Research Institute, Palo Alto, Calif. You can determine chemical composition of the surface, depth variation and penetration, and get some idea of physical properties. Protons are bounced off a surface, then captured and their momentum measured. When opal glass is bombarded with protons, for example, the fluorine absorbs a proton and kicks out an alpha particle and gamma radiation as it transforms to oxygen. By measuring the amount of gamma, you find the original fluorine content.

UNUSUAL SALVAGE OPERATION— Water is used to wash about 24,000 lb of metal chips each day through an underground trough to a central point for salvage at the Wichita, Kans., Div. of Boeing Airplane Co. Chips are accumulated in production of the new B-52G Stratofortress, first U. S. missile platform bomber. Use of Armco liner plates in constructing the tunnel made it unnecessary to disturb aboveground facilities.

POWER SWITCH IN STEEL PLANT— Mercury arc rectifiers are replacing motor-generator sets in the La Salle Steel Co. powerplant at Hammond, Ind. The new equipment, furnished by Allis-Chalmers Mfg. Co., Milwaukee, has 1000-kw capacity and converts 3 phase, 60 cycle, 480 volt alternating current to 250-volt direct current for shop equipment.

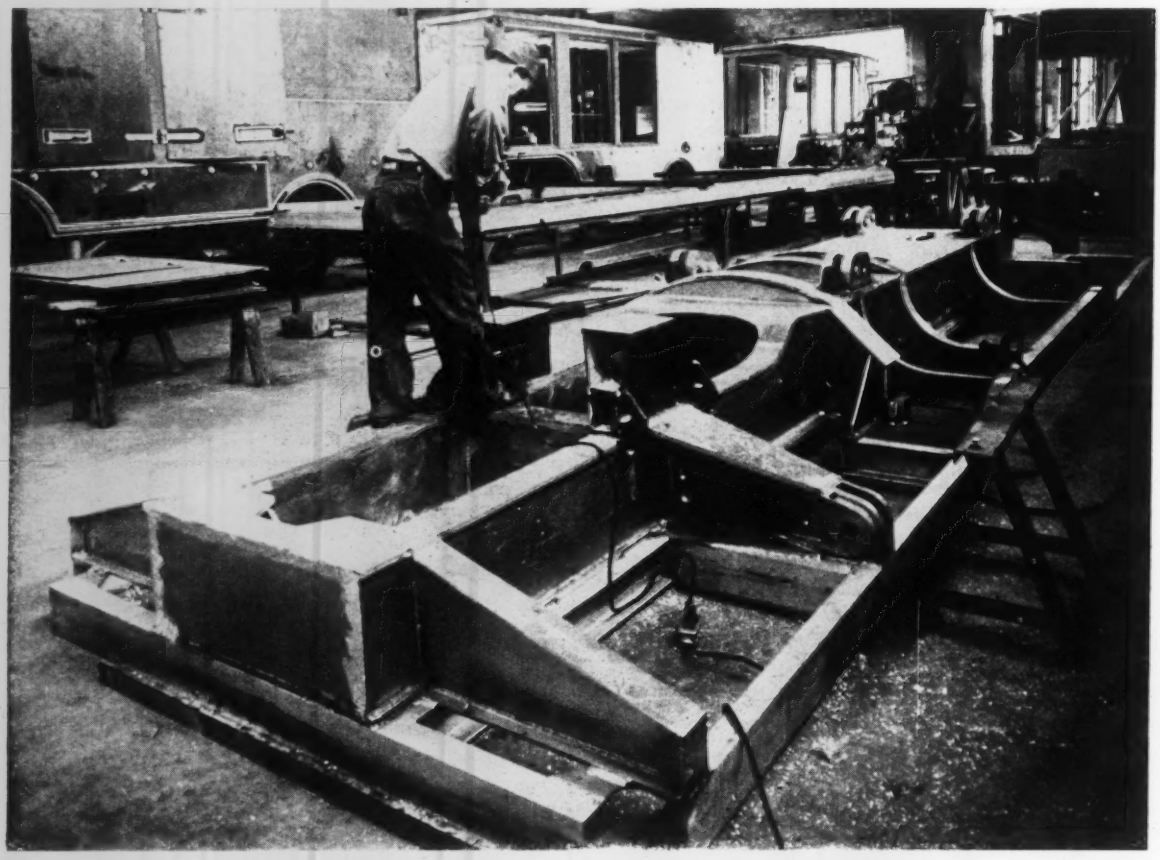
RAINBOW FINISHES SPRAYED— Up until now, only single-color industrial finishes could be sprayed by electrostatic processes. A centrifugal-type system developed by Ionic Electrostatic Corp., Garfield, N. J., has changed that. John Sedlacsik Jr., president, says Ionic's system handles single colors or multicolor patterns. He foresees development of new techniques as a result.

FLEXIBLE PORCELAIN— Its new lead-free enamel is said to stick better and look better than regular lead-bearing frits, says American Lava Corp., subsidiary of Minnesota Mining & Mfg. Co., Chattanooga, Tenn. Strips of coated aluminum can be twisted three times around without flaking the coating off. Current uses: Architectural panels, cooking ware, advertising signs.

How We Beat the Cost Crisis

THE JOB: Fabricate Aluminum Trailer Frames

Switch from sawing to shielded arc cutting saves $11,500 annually. It takes only 30 minutes to change equipment from arc cutting to arc welding. This article is one of the top entries in the Cost Crisis Awards Competition. Another will appear next week



An operator puts the finishing touches on an aluminum trailer subframe assembly. It requires more than 400 ft of welding

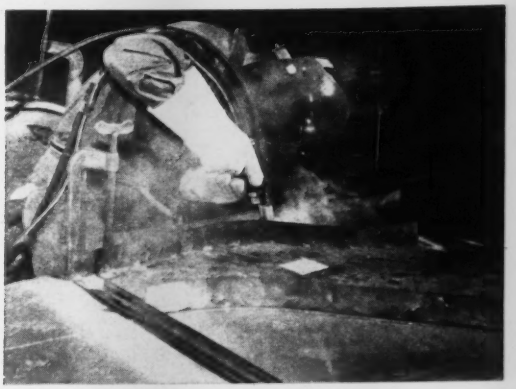
We Cut and Weld on the Same Equipment

SAY you are faced with the problem of contour and straight cutting aluminum plates, then welding the sections into assemblies. The production rate is fairly low.

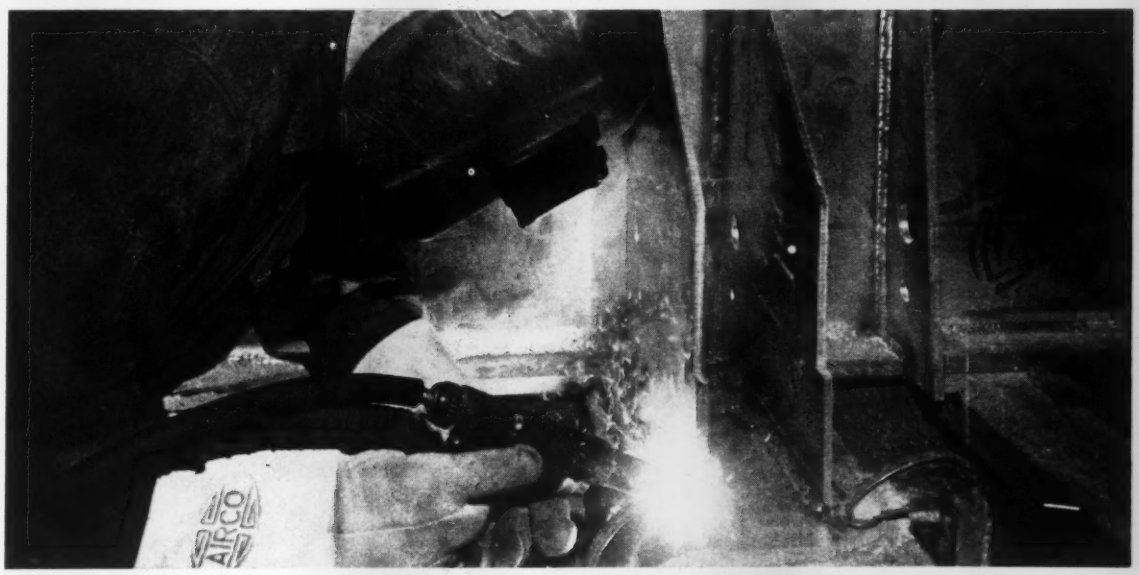
Would you set up for sawing, then welding? Would you need two pieces of equipment? Two operators? Two departments?

• **Case History**—Converto Mfg. Co., Cambridge City, Ind., had the problem. The company makes aluminum trailer frames. Frame rails are ½ in. thick, 30 ft long. Another part

Here the operator feeds the cutting arc through the aluminum plate at a feed of about 340 in. a minute. The shielding gas is argon



The operator cuts a contoured path by hand—following a curved template



After the cutting for the lot is completed, the shielded arc is converted for welding. Here the operator lays down a fillet weld

is 150 in. long, ¾ in. thick.

The parts, and the accurately located access holes that have to be cut in them, require a lot of cutting. Ernest C. Jones, assistant to the president, told STEEL that sawing required an elaborate table and several men to guide the piece.

• **Solution**—The welding job was being done by inert gas, shielded arc welding, using consumable electrode machines. Engineers found that the welding equipment maker, Air Reduction Co., Inc., New York, also makes equipment to cut nonferrous metals.

With the addition of little new equipment, the company could convert its welder for cutting. All it took was a 1000-ampere power source (500 was enough for welding) and some gun conversion parts that would take the 3/32-in. steel wire needed for cutting (1/16-in. aluminum wire is used for welding).

Mr. Jones explains: "A nominal investment in equipment gave us an additional process without having a special machine available for one use only. It's estimated that this setup saves $500 a unit in eliminating extra manpower, material handling, and setup time."

Trailer frame assembly is on a two-week schedule. During the first day and a half, the gun is used to cut the metal. Then it's changed over (it takes about 30 minutes) for welding. Access holes are cut after assembly. This eliminates the need for accurate part layout and accurate assembly locatings.

This bowl-shaped part matches the one at right. Note that explosive forming hasn't damaged weld. Not shown at bottom is double 90-degree bend—almost impossible for mechanical methods

Hub-shaped part becomes inner sleeve of afterburner on a jet engine. Blank is welded cylinder of 0.025-in. Multimet. Notice the exceptional complexity of bends at the bottom

Explosives Blast Bottlenecks

This new method is fast and often requires comparatively simple tools. Results are outstandingly accurate, say experts. Here is how one firm benefited

IF you've got a leadtime problem with hard-to-form parts you could profit from the experience of Metro Engineering Associates, Easthampton, Mass.

The firm had to make two tough parts for a General Electric jet engine which powers a new Bell helicopter. National Northern Corp., a subsidiary of American Chemical & Potash Corp., West Hanover, Mass., supplied the knowhow.

National's vice president, Samuel J. Porter, tells it this way.

• **Usership**—"The morning STEEL's story on explosive forming came out (Aug. 25), we got a call from Richard Muszynski, Metro's president, who asked us to form some parts on short notice.

"Early the next morning, the female die and several welded blanks of 0.025-in. Multimet (a Haynes Stellite alloy) arrived by truck. We would have liked longer blanks to start with (later ones were lengthened a couple of inches), but we managed several parts by the third day. Metro flew the parts to General Electric which gave its approval.

"Metro flew in some more blanks which we finished by the following Monday. The parts all expanded evenly. Diameters were accurate within 0.003 in. Variations in wall thickness were hardly detectable."

• **Difficulties** — Metro engineers point out that the bulge in the cross section makes a split die necessary. Mechanical versions of such tooling are especially complex. That of explosive forming is extremely simple by comparison. Many such dies can be cast to further trim costs.

National Northern is one of the few job shop operations referred to in STEEL's Aug. 25 article.

Ductile Beryllium

Firm is searching for ways to produce standard forms by conventional casting techniques

A PROGRAM to develop a commercially feasible procedure for producing ductile beryllium metal castings has been started by Beryllium Corp., Reading, Pa.

The work will be done under a research and development contract authorized by the Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio.

• **Present Practice**—All commercial grade beryllium is fabricated by powder metallurgy because production ingots of the metal are not suitable for wrought processing.

The ingots are lathe chipped and the chips ground in an attrition mill to a −200 mesh powder. The powder is compacted under high temperatures and pressures in a vacuum furnace and the blocks produced are machined to the desired shapes. The ingot-powder-pressing procedure is lengthy and costly.

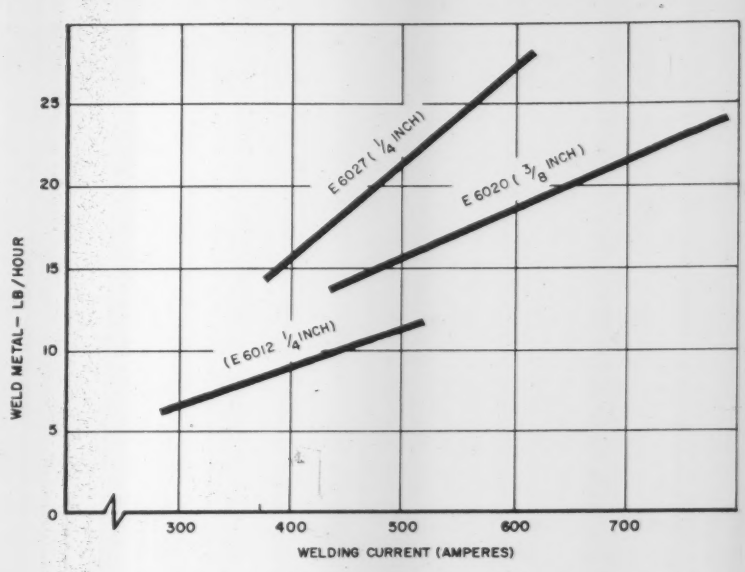
As outlined in the Air Force contract, Beryllium Corp. will investigate the possibilities of producing castings by centrifugal, pressure, and vacuum casting techniques.

• **Seek Standard Forms**—The Air Force is seeking methods that can be used to produce cast structures of beryllium which are suitable for fabrication into standard mill forms. Metal experts agree that such methods could bring substantial reductions in the cost of the metal.

Beryllium is three times stronger than steel on a strength-to-weight ratio basis and it will retain its strength up to 1200° F. Its weight is the same as magnesium.

Blasting Brightens Chain

The alloy slings and chain components made by American Chain Div. of American Chain & Cable Co., York, Pa., have new "eye appeal." The company shotblasts products in a Wheelabrator Tumblast unit to rid them of rust and scale. They come out with a silver-like finish. To preserve the finish and avoid oily rust preventives, the firm uses a clear, rust inhibiting solution that dries like lacquer.



Deposition rates of conventional electrodes are increased from 10 to 40 per cent by cooled holder. Rates are based on actual arc time

Cool Tool Ups Weld Speed

A cooled electrode holder can increase the current carrying capacity of stick electrodes, says this firm. One company reports savings of 7 to 8 per cent

A WATER-COOLED holder increases the welding speed of conventional electrodes by as much as 200 per cent.

The reason: The coolant creates a heat sink that drains off resistance heat, permitting higher welding currents. The maker, Bernard Welding Equipment Co., Chicago, says the device lets an operator lay down as much as 28 lb of weld metal an hour.

Chicago Bridge & Iron Co., Chicago, has been using the device for several months. Engineer Adam Bunk says: "We saved about 7 or 8 per cent on the first job, compared with the noncooled type."

• **Lists Advantages**—Many operators prefer regular flux-covered electrodes to more complex methods. First cost is low. Each rod contains all the elements needed to make a sound weld.

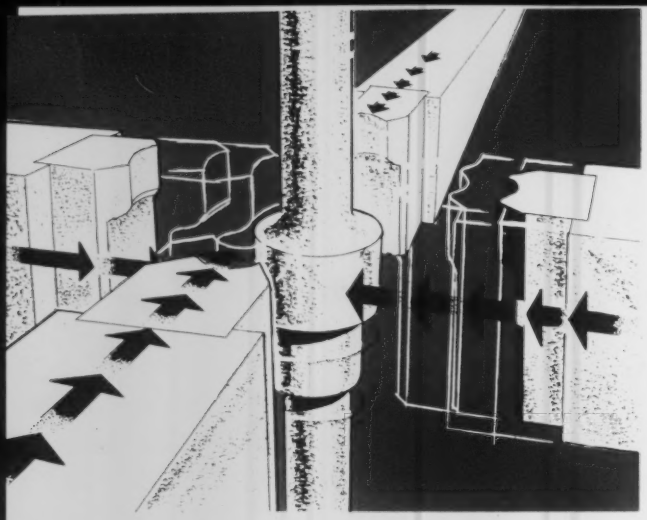
• **Theory**—The welding speed of a standard electrode is limited by size. Each can carry only so much current without overheating.

Electrodes begin to heat up the minute the arc is struck. Stub ends are often discarded prematurely because they're too hot for proper welding. An overheated electrode also overheats the holder which transfers some of its heat to the next electrode.

The water cooling keeps both holder and the upper third of the electrode cool. Downtime for overheated holders is eliminated.

• **Examples** — Using the holder current can be increased 10 to 40 per cent. (It's less for cellulose coverings than for mineral types.)

The maker claims that 500 amperes is safe for a 1/4-in. electrode if you use a cooled holder. If you choose a 3/8-in. Type E-6020, it will deposit nearly 25 lb an hour with an 800 ampere current.



Drawing shows how rotary forging is done. The machine holds the workpiece vertically and rotates it while four horizontally opposed hammers beat it into the desired shape

Cross section of a heat exchanger tube that was rotary forged against a shaped mandrel. Such a part requires intense working of metal

Precision shaping of parts to plus or minus 0.012 in. on the outside and 0.004 in. on the inside slashes expensive machining time, minimizes chip loss

Rotary Forging Turns Profits Up

ROTARY FORGING—a process developed in Europe—promises substantial metal savings, low tooling cost, fast production, and greater part strength, predicts Curtiss-Wright Corp., Buffalo.

Material savings are typified by:

1. Tractorshaft—weight cut from 52 to 31 lb, a saving of 40 per cent.
2. Splineshaft—reduced from 87 to 54 lb, a saving of 38 per cent.
3. Turbineshaft — down 21 per cent from 12 lb.
4. General use shaft—weight reduced over 50 per cent, from 12 lb to 5.5 lb.

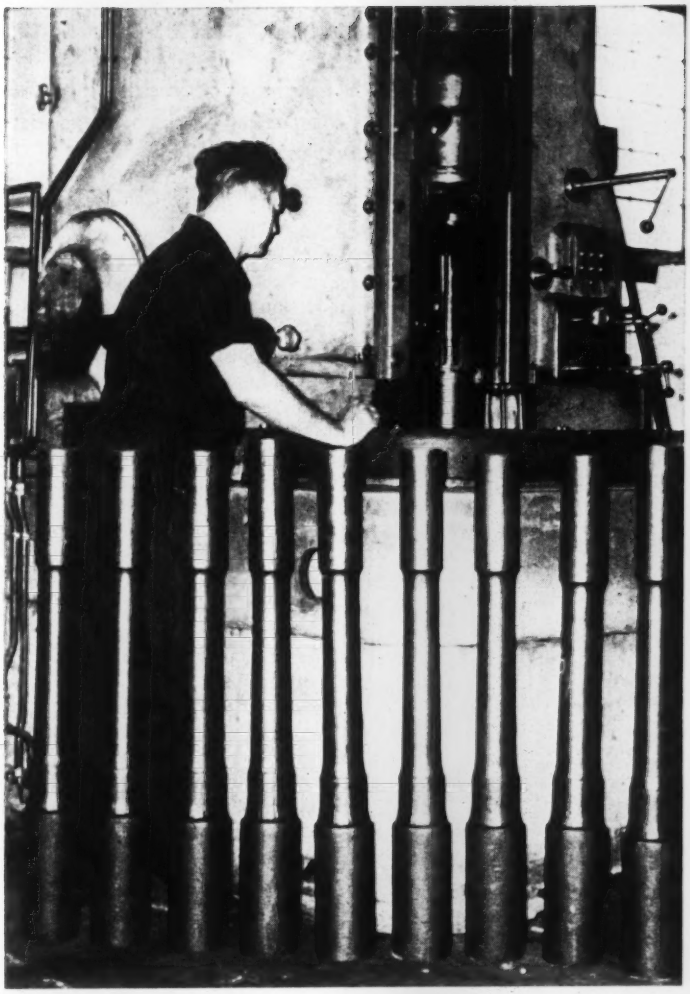
• **Proved Abroad**—The process was developed and proved in Europe over the last eight years. The machine evolved from a wartime swaging development. It will work parts hot or cold, using round, square, solid, or hollow billets. Normally, this process does more working than conventional forging. The properties of bar stock are upgraded by the controlled grain flow.

Costwise, the process is appealing. Material savings of 40 to 50 per cent are possible. Tooling costs are low, often less than one-tenth that of tooling conventional forging equipment. Major savings in making parts stem from the reduction of machining time for finishing operations since the forged shape is controlled closely.

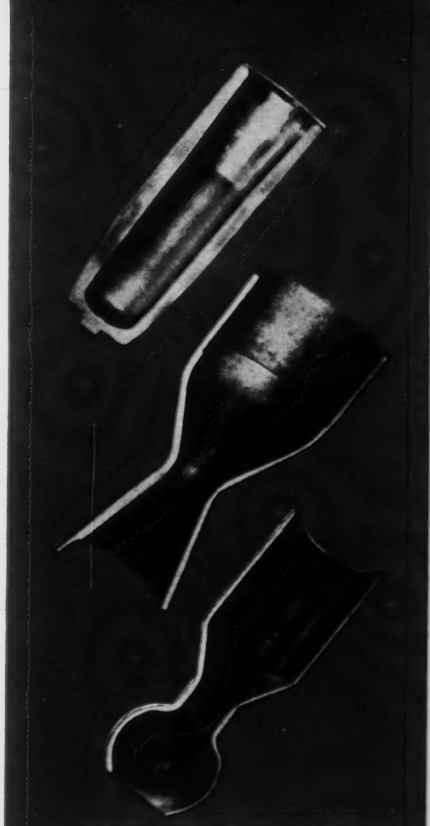
• **How It Works**—The process is in use at Curtiss-Wright Corp.'s Metal Processing Div. in Buffalo. It is designed to force the metal flow into a set contour.

The vertical workpiece rotates while four horizontally opposed hammers beat the part into the desired contour. (The hammers strike as many as 500 synchronous blows a minute.)

Shape is controlled two ways: It is either machined into the hammer, or it is produced by varying the length of the hammer stroke. In the second method the throw of the hammer is programmed by a master cam controller. Curves, steps, and special shapes are generated on the outside diameter as the work is



An array of heavy duty axle shafts that were rotary forged from solid billets are stacked up around Curtiss-Wright's machine



Three parts that have been rotary forged. Top to bottom: An artillery shell, a venturi tube, and a ball-end tube. The shell was produced in a second forging operation from a forged blank. The other shapes were forged from hollow cylindrical stock

automatically lowered past the hammers.

Hollow parts are also formed by rotary forging. Interior shapes are made by forging the workpiece against a shaped mandrel. This is used to make intricate shapes to close tolerances.

• **Work Temperature**—Most work is done hot when the maximum movement of stock is desired. Scale-free heating is a must if a high quality surface is to be produced on precision forgings. Normal forging temperatures for the material are used.

Cold forging (room temperature) is normally used to make a high precision internal shape like small caliber gun barrels.

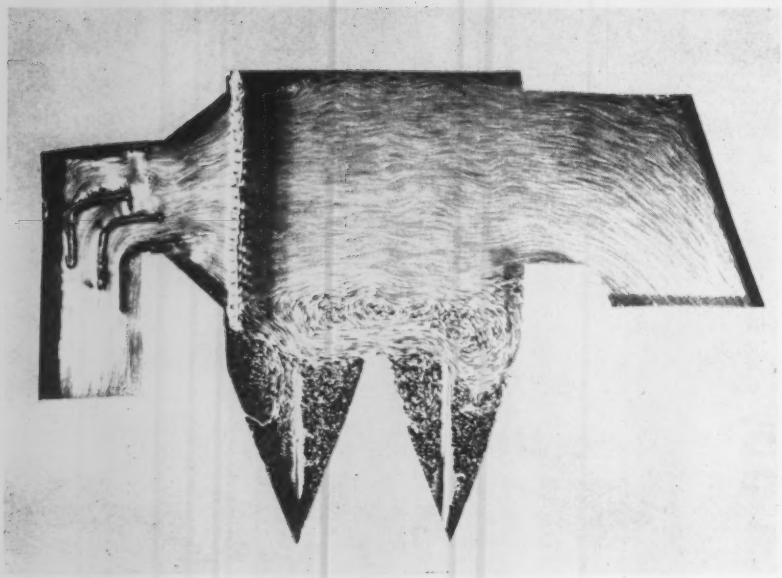
• **Parts Made Fast**—Many examples of speed can be cited. A piece with seven outside diameters plus four inside diameters is forged in 40 seconds. A rocket nozzle requires 30 seconds.

Speed does not detract from accuracy. Heat exchanger tubes with flanged interiors, venturi tubes, and artillery shells have been made. Outside diameter tolerances are ± 0.012 in.; inside tolerances are ± 0.004 in.

• **More Uses To Come**—The Curtiss-Wright machine takes solid parts up to 4 in. in diameter and hollow parts up to 5 in. OD. Forged length is normally restricted to 39 in.

The company's engineers are working with the European developers of the process to broaden its scope of uses. One problem recently solved was hot forging a small diameter, hollow generator shaft.

The problem was twofold. If the mandrel was kept too cool, it lowered the temperature of the workpiece below forging temperature. If the mandrel was too hot, the hammers forged the mandrel and the desired shape was lost. Carefully controlled water flow through the mandrel made the proper temperature gradient possible.



This time exposure shows a highly desirable precipitator flow pattern

Water Plots Air Flow

It has proved to be a good substitute for air in testing vanes and baffles of electric precipitators. It means that efficiency can be checked prior to installation

A WATER TEST is being used to study air flow patterns in electric precipitators.

It was developed by Buel Engineering Co. Inc., New York, to check the effects of inlet and outlet duct arrangements. The firm reports a high correlation between water and air flow patterns.

The efficiency of large collectors is affected by the distribution and smoothness of the gas flow through them. It is desirable to design ductwork, vanes, and baffles for uniform distribution and minimum turbulence.

• **Procedure**—All preliminary ductwork arrangements are now tested on the water device before final design is undertaken. It consists of a 36 x 60 x 5 in. deep table with a water inlet at one end and an outlet at the other. Strips of metal are used to form a scale cross section of the precipitator. Water dyed with bluing and sprinkled at the inlet with aluminum powder creates an effective pattern that reliably indicates flow characteristics.

After the water is turned on, different vane and baffle arrangements are studied to determine the one which will provide the best air flow pattern for the collector being considered.

• **For the Record**—All arrangements tried are recorded on motion pictures. Time exposures are used to provide flow pattern illustrations.

Three-dimensional models are used for troublesome cases.

Old Steel Preferred

It's sought out for shielding use at atomic center since it has lost much radioactivity

STEEL 10¼ in. thick will be used for the walls of a radiation-proof room at Hanford Atomic Center in eastern Washington. As a part of a radiation protection program, it will house equipment that measures radioactivity in human tissue.

The room is designed to exclude (as much as possible) the natural radiation that man is subjected to. This includes the tiny amounts of radioactive elements found in soil and water—as well as cosmic radiation.

New steel contains minute amounts of radioisotopes that were present in the air, water, carbon, and ore used in making it. The designers, therefore, decided to build the room of metal which had lost radioactivity through natural decay of radioisotopes. For this they used pre-World War I armor plate obtained from the Navy.

The armor plate will go into the floor, ceiling, and walls with 3 in. of new steel on the outside for additional shielding. This large amount of metal is needed to handle natural radiation—plus that added by man through industrial and military atomic fission.

Bethlehem Pacific Coast Steel Corp., San Francisco, supplied 40 tons of 3-in. plates for the exterior layer. The new steel contains a minimum of radioactive isotopes.

Spec Handbook Out

The Department of Defense has revised its *Cross-Index of Chemically Equivalent Specifications and Identification Code* for ferrous and nonferrous alloys. Dated May 15, 1958, the handbook includes additional specifications and amendments to specifications issued through September, 1956. For your copy write to: Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Ask for book by title and identifying symbol *Military Handbook H 1B*. Price is $1.75.

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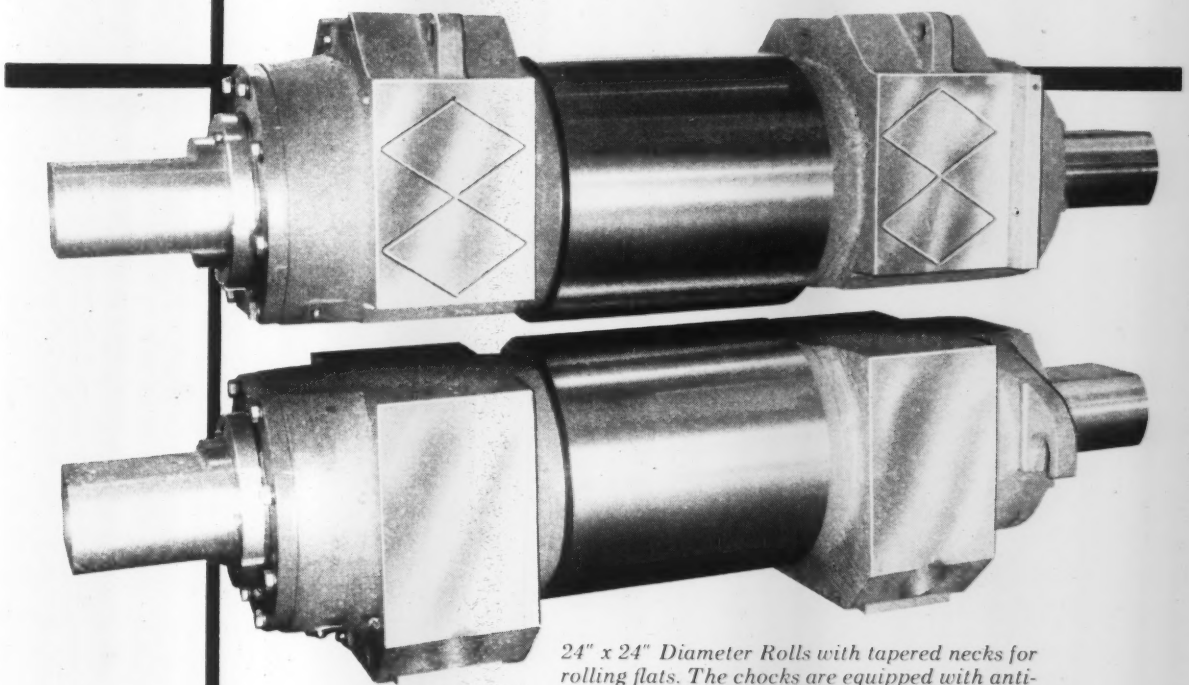


24" x 24" Diameter Rolls with tapered necks for rolling flats. The chocks are equipped with anti-friction tapered roll neck bearings and thrust bearings. Bottom chocks are equipped with four (4) hydraulic roll balance jacks.

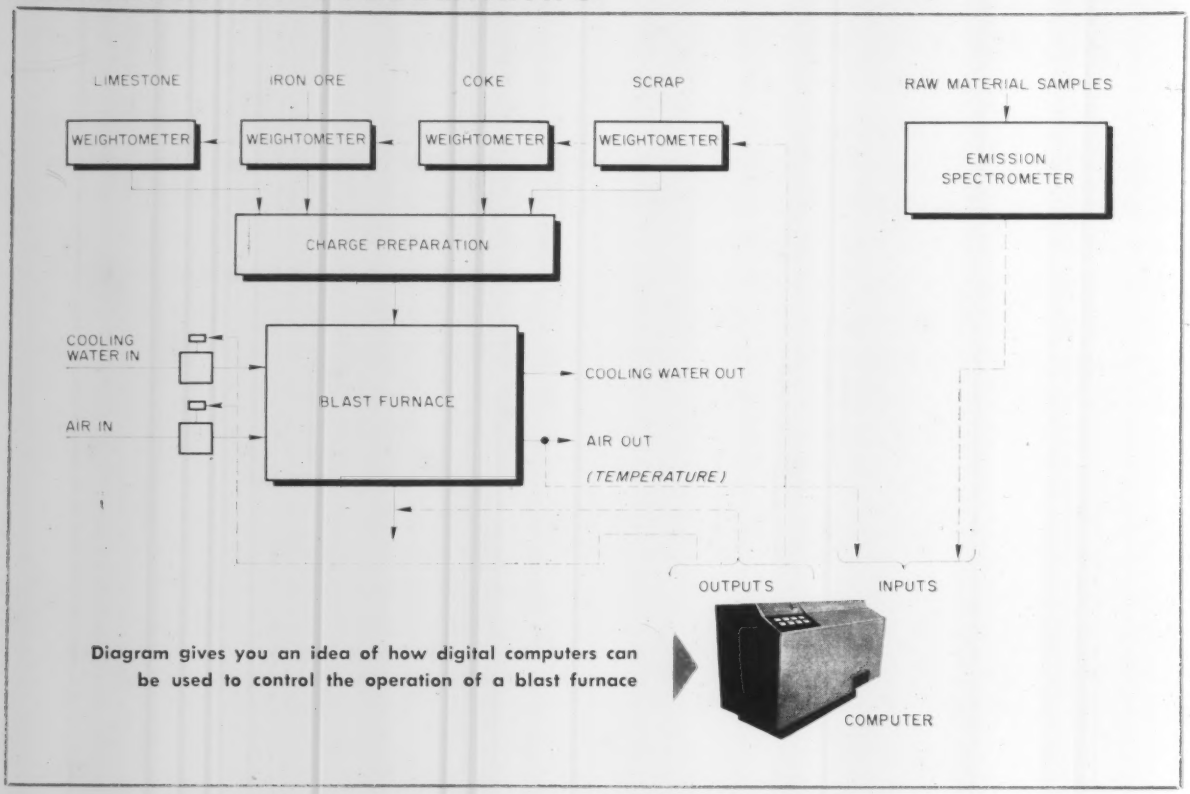


Diagram gives you an idea of how digital computers can be used to control the operation of a blast furnace

How Computers Will Help Steelmakers

Seven big applications will be feasible within near term, predicts author, Montgomery Phister Jr., director of engineering, Thompson-Ramo-Woolridge Products Co.

LOOK FOR many steelmaking and other processes to be controlled by digital computers within the next five years.

Here are seven possible applications in steel plants:

• **Production Scheduling** — Computers could assure that materials are always available and add economies in usage.

• **Coke Ovens**—Computers could be used to blend coals for charging and monitor production rates of ovens by controlling such variables as air flow.

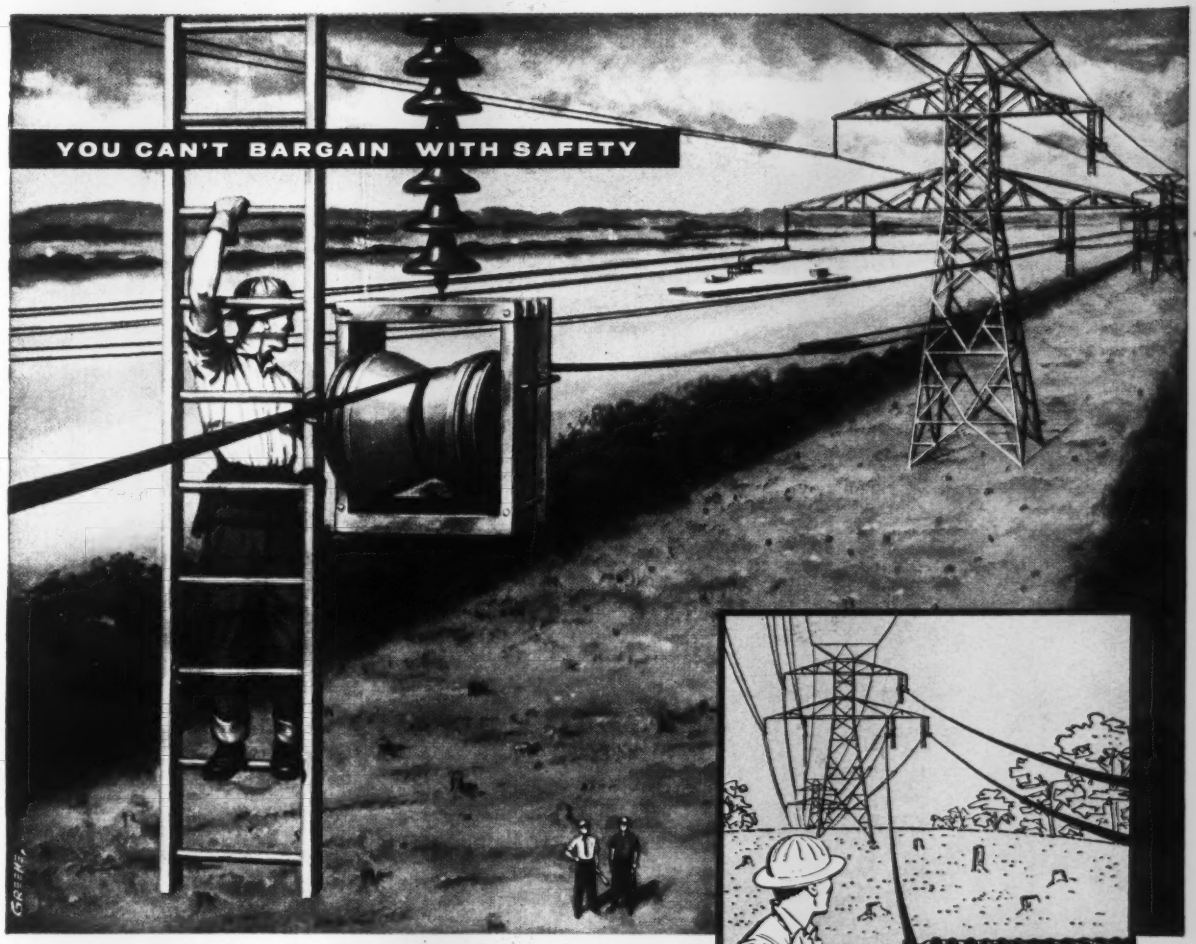
• **Blast Furnaces**—Computers could proportion iron ore, coke, scrap, and limestone; control cooling water rates, charge rates, and blast air rates to maintain furnace conditions at their best; and determine when the furnace should be tapped.

• **Open Hearths**—Computers could figure proper proportions of pig iron, scrap, and sinter for a given composition; control air flow and furnace draft to determine the best time for reversing furnace air; supply data to determine the end of a heat; and compute proportions of alloy additions for special steels.

• **Byproduct Plants** — Computers could control the most critical parts of such units as fractionating towers, absorbers, and strippers. Benefits would include increased production, higher quality.

• **Soaking Pits**—Computers could bring about savings in fuel consumption through better scheduling of ingots in and out of pits; they could also improve control over the rate of temperature changes to bring ingots up to heat at the proper time without damaging ingots and wasting fuel.

• **Rolling Mills** — Computers, for example, could determine how big a bite to take on a slab to reduce it in the fewest possible passes, while



Stringing conductors on towers carrying a live 330,000 volt circuit is a tough job. Hoosier Engineering Company of Columbus, Ohio, does it by threading conductors up to 1¾" through a tension machine and pulling them over sheaves on the tower arms with 9000 foot lengths of Wickwire Wire Rope. On jobs like this, where men's lives are at stake . . .

rope failure can be fatal

Whether you're stringing power lines, pulling drill pipe, or handling other hazardous hoisting jobs—don't bargain with safety. "Bargain" wire rope can cause more trouble and expense than you expect. Buy wire rope on the basis of *quality* . . . buy Wickwire Rope.

For extra strength—buy Wickwire's Double Gray IWRC extra improved plow steel wire rope

WICKWIRE ROPE — A CF&I PRODUCT

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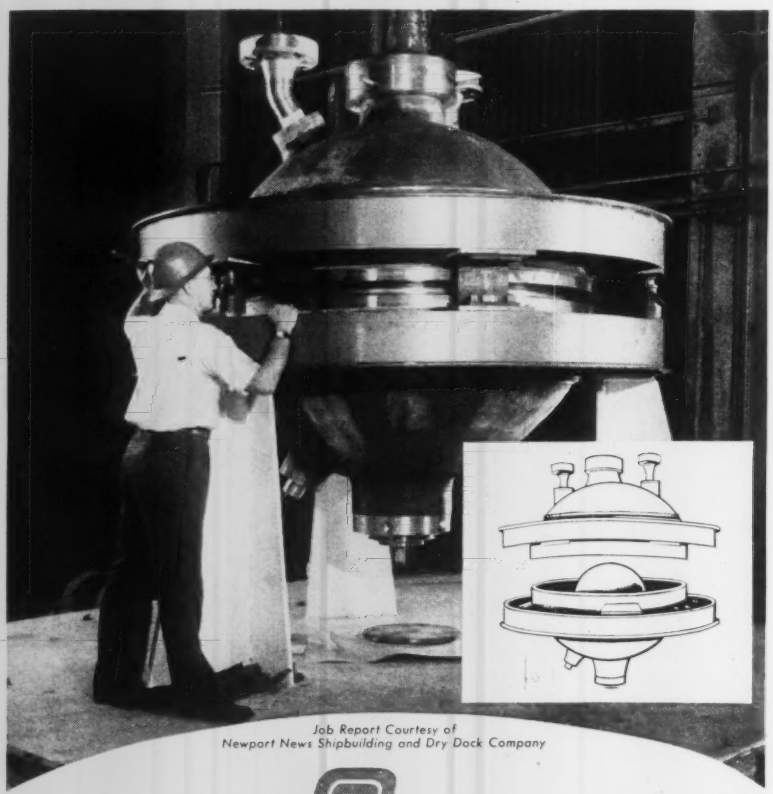
NEW WELDING PROCESS used to fabricate reactor test vessel

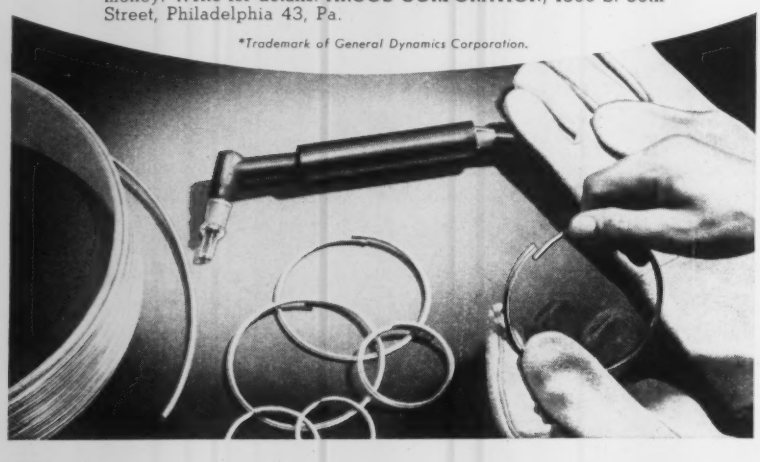


Job Report Courtesy of
Newport News Shipbuilding and Dry Dock Company

the ARCOS EB* WELD INSERT

To simplify and speed joining the halves of this pressure vessel shell, and insure corrosion resistant root passes, a preplaced Arcos Consumable Insert was used. With this method, *only outside welding* was required to produce sound welds with uniform contours on the inaccessible inside surface. The welds readily passed Radiograph inspection for freedom from porosity, slag and other inclusions. The EB Weld Insert can save *you* time and money. Write for details. ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Pa.

*Trademark of General Dynamics Corporation.



COMPUTERS . . .

protecting rollers and leaving the slab on the right side of mill after the final pass. (Simple analog computers are now being used for partial control of rolling mills.)

• **Why Digitals**—In present applications, most computers receive data from punched cards or punched tape and give results in visual form. Digital systems receive their input information directly from process instruments, as well as from operators. In addition to printing results, they can control the flow of materials and take other direct actions.

They will continuously watch over conditions within a process, making calculations to interpret and analyze them. They will take corrective action to maintain product quality, improve the efficiency of operations, reduce operating costs, and increase the amount of product made.

• **What They Cost**—A typical computer control system for a steel mill might cost $250,000. It would include:

Digital control computer	$100,000
Input and output equipment	50,000
Instrumentation	50,000
Installation engineering	50,000

Other digital control systems could cost anywhere from $150,000 to several million dollars—price depends on such things as their speed of operation, versatility, number of input and output devices, and the size of their memory. All systems are fundamentally the same.

• **Big Advantage**—It is not necessary to have complete understanding of a process to use a digital control system. The computing ability and high speed of a computer allow it to make better use of available information, and, as a byproduct, enable the operator to accumulate more information.

• **What They Are**—Digital computers have large mechanical memories; they can do a long sequence of operations accurately and rapidly. Their operations fall into four categories:

1. Input of information from outside the computer.
2. Arithmetic calculations, using

input data and data stored in the computer.

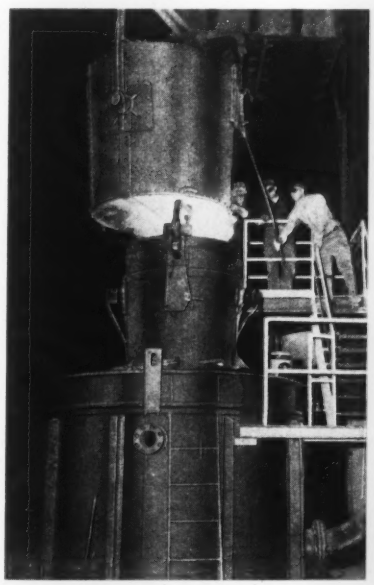
3. Decision making—the computer makes a choice of alternatives, depending on the results of its calculations.

4. Output of information to a printer or other device outside the computer.

• **One Limitation**—Getting instrumentation to measure important process variables has been a problem, but great strides have been made in the design and application of measuring instruments. For example, the spectrometer is becoming widely used in the analysis of steels.

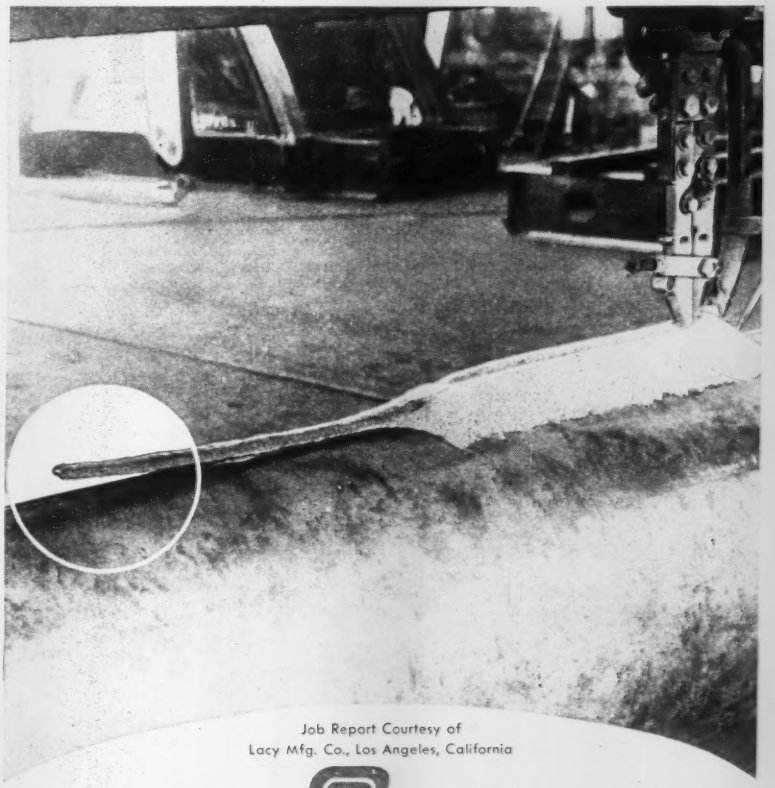
Digital control systems can obtain information from it directly—and automatically.

More improvements in instruments are needed. It may be necessary to use some incomplete information in control systems until continuous measuring devices which are accurate become available to the industry.



VACUUM STREAM DEGASSING equipment installed at Universal-Cyclops Steel Corp., Bridgeville, Pa., to improve the quality of the company's tool steels, has been used initially to process all large ingots of Thermold AV diecasting die steel. The technique contributes to homogeneity of structure, freedom from gaseous impurities, high polishing quality, and resistance to thermal and mechanical fatigue

Now, submerged arc stainless welds with slag that "pops-off"



Job Report Courtesy of
Lacy Mfg. Co., Los Angeles, California

WELD WITH ARCOS

Stainless Wire and Arcosite Flux

Arcos research and experience with stainless weld metal now pays you *another dividend*—for the first time . . . consistently *self removing slag!* On the job above, submerged arc welding of a section of pipe for petroleum equipment, two passes were made with 1/8" coiled CHROMENAR KMo Stainless Wire and ARCOSITE S-4 Flux. As the photo shows, the cooling slag is lifting free by itself . . . leaving a clean, smooth bead. Think what this can mean to you on your own submerged arc welding jobs . . . saving time and money . . . better welds than ever before. ARCOS CORPORATION, 1500 S. 50th St., Philadelphia 43, Pa.

Reserves are only part of the reason why Canada produces more than eighty per cent of the free world's nickel. More important than the reserves are the Canadians themselves. For Canada has bred a group of men who have made mining their lives. Men who spend their days and nights wresting ore from the earth and metal from the ore.

These are the men who have made Sherritt Gordon Mines Limited the third largest nickel producer in Canada. For them, mining was always a full time job. First copper mining, then nickel mining. Now they are blazing a trail in nickel refining. A new revolutionary process, developed by Sherritt, has captured the imagination of metals people the world over. And as the need for nickel has grown, so have the men of Sherritt expanded their facilities to meet it.

By adding a third skill to mining and refining, Sherritt enters a new era of growth and service. On September 1, 1958, Sherritt named Foote Mineral Company the sole sales agent for Sherritt nickel in the United States and Canada.

SHERRITT

nic

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As Sherritt typifies the determination and devotion of the Canadian miner, so Foote typifies the concept of imaginative service of the American technical marketer.

Foote's entire history has been marked by a deep understanding and familiarity with the earth sciences. But going beyond mere understanding, Foote has used its knowledge to help customers expand the known markets. And entirely new markets have been opened for such materials as lithium and manganese.

The reputation won by Foote in the creative marketing of metals, minerals, and chemicals has now secured for Foote a new challenge . . . the exclusive sales agency for Sherritt nickel in the United States and Canada.

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kel

marketed by FOOTE

Drop in Capacity Feared

Builders warn that imminent reduction of machine tool capacity is dangerous to U. S. security. The villain: Washington's concept of a 20-minute war

THE MACHINE tool capacity of the U. S. has shrunk below the margin of safety, asserts A. V. Bodine, president, Bodine Corp., Bridgeport, Conn. He is the outgoing president of the National Machine Tool Builders' Association.

Speaking at the association's annual meeting last week, Mr. Bodine said: "The concept that we need prepare only for a nuclear war is seriously jeopardizing the safety of the U. S."

• **Conflict**—Machine tool sales now are down 74 per cent from those in 1956, 25,000 employees have been laid off, and the number of machine tool companies has declined from 403 in 1952 to 367 today, he pointed out.

But, as for government, Mr. Bodine said: "The current theory is that the next war will be a 20-minute one fought with rockets, missiles, etc., the manufacture of which does not require a large number of machine tools; and that, therefore, the present state of the machine tool industry is nothing to worry about. I consider this point of view dangerous indeed."

Taking issue with Washington military opinion, Mr. Bodine said: "To be properly prepared, we should be ready to produce, at a moment's notice, the requisite quantity of weapons to be used in nonnuclear warfare. This sort of production requires a good many machine tools.

"Is our industry," he concluded, "enmeshed in the web of reciprocal trade and low foreign wage rates, to go the way of watches and bicycles? Or is it, like shipbuilding and aircraft, to be regarded as a vital arm of national defense, and its capacity maintained accordingly? That is a question confronting Washington today."

New NMTBA president is Ralph J. Kraut, president, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

New NMTBA first vice president is Alan C. Mattison, president, Mattison Machine Works, Rockford, Ill.

Cuts Painting Cost

ARE YOU looking for a way to trim your cost of cleaning and painting metal parts?

A new trichlorethylene-based system developed by the Electrochemicals Dept., E. I. du Pont de Nemours & Co., Wilmington, Del., may be it. It promises savings up to 50 per cent in initial investment and operating costs, says Fred G. Schumacher, the co-ordinator.

In the Du Pont process, vapor degreasing is integrated with application of paint by flow coating. The system sharply reduces floor space requirements compared with present methods of operation.

By using nonflammable trichlorethylene for vapor degreasing and paint thinner, the savings inherent in flow coating methods are realized and fire hazards eliminated.

• **Big Advantage**—Principal savings result from the recovery of oversprayed paint and volatile thinner. Important economies are effected by combining cleaning, painting, and drying in one machine.

All operations are carried out beneath a protective blanket of trichlorethylene vapor. Work enters at one end, is cleaned, painted, and removed from the machine free of trichlorethylene thinner.

• **Handles Various Paints**—When an air-drying paint is used, the parts are dry and ready for shipment when removed.

When a baking paint is used, the parts proceed immediately to the baking operation. In some instances where a second coat of paint is required, it can be applied prior to baking the primer, and the coats baked together.

Du Pont tests show that trichlorethylene-thinned paints with properties similar to those of most conventional paints can be formulated. In general, any paint ingredient which is soluble in trichlorethylene, such as alkyd resins, epoxy esters, acrylic resins, asphaltic materials, and chlorinated rubbers, can be used. Paint can be pigmented and decorative as well as protective.

Du Pont's machinery was designed for automated production line use, but can be adapted easily for other types of operations, including dip painting, states Mr. Schumacher.

Spring steel within this range...

FOR THE MOST EXACTING NEEDS KNOWN TODAY!

• That this is the age of specialization is certainly true in the use of steels. And in this regard *Athenia Steel* customers benefit especially by two not-too-common factors. First, by extreme control of quality and uniformity, unsurpassed, seldom equalled *anywhere!* Secondly, by painstaking technical service to determine or develop precisely the right steel for any special need.

Here at Athenia we concentrate on cold rolled high carbon flat steels, custom made of .45 carbon and higher, in widths from .015″ to 16″ and thicknesses from .001″ to .065″. Full range of finishes and tempers. We also produce special narrow width stainless, and the new super-tough, corrosion resistant spring material, Nilcor*.

For a new and profitable experience in service and in steel controlled precisely to *your* needs... try us!

*Trade Mark National-Standard Company

NATIONAL NS NATIONAL-STANDARD Company **STANDARD**

NATIONAL-STANDARD, Niles, Mich.; *fine wire, stainless, music spring and plated wires, flat and tubular braid and wire cord*
WORCESTER WIRE WORKS, Worcester, Mass.; *music spring, stainless and plated wires, high and low carbon specialties* • **REYNOLDS WIRE**, Dixon, Ill.; *industrial wire cloth*
WAGNER LITHO MACHINERY, Secaucus, N. J.; *metal decorating equipment* • **ATHENIA STEEL**, Clifton, N. J.; *flat, high carbon spring steels*
CROSS PERFORATED METALS, Carbondale, Pa.; *industrial, commercial, and decorative perforated metals*

Every 27.8 minutes, 816 holes are drilled, combination reamed, and countersunk

Driller Increases Output

Multiple-spindle machine again proves its ability to up production. In this situation, it outdoes a single spindle by producing 16 times as many workpieces

PROGRESSING from single spindle to multiple spindle equipment has raised production of computer plates sixteenfold (from one pair to more than 16 pairs in an 8-hour day) at Remington Rand Div., Sperry Rand Corp., Ilion, N. Y.

Since the aluminum plug board plates are used in pairs, they are also drilled in pairs to eliminate the need for matching.

The 24-spindle Natco H-6 driller is made by National Automatic Tool Co., Richmond, Ind., and it is arranged with an automatic, air-operated indexing fixture. One set of parts is drilled at high speed by the 12 lefthand spindles while another set is combination reamed and countersunk by the remaining 12 running at low speed.

The fixture indexes sideways to machine 24 holes, and the process is repeated until 34 rows are obtained. After a finished pair is removed, a drilled pair is transferred to the righthand position and a new set is positioned for drilling.

Floor to floor time, including cleanup and reload, is 27.8 minutes.

Heat Cuts Magnetism

Except for lightly deformed specimens, annealing Ti-140A, a commercial titanium alloy, at 570° F for 4 hours will nullify increases in magnetic susceptibility caused by cold working or quenching at high temperatures, Y. L. Yao reports in *Transactions*, American Society for Metals publication.

The same heat treatment may increase the susceptibility of lightly deformed specimens; 4 more hours of annealing at 750° F may cause a still greater increase.

Magnetic susceptibility is increased as much as 4 per cent in the alloy by cold working or by quenching at temperatures between 570 and 1830° F.

The unusual effects of low temperature annealing may be related to strain aging, Mr. Yao says. A tentative assumption is that increased susceptibility is caused by the inducement or relief of internal strains.

Measurement of magnetic susceptibility can be used for quick detection of intense stress concentrations in a quenched or cold-worked specimen of the alloy.

New Stainless Named D319

A modified version of AISI Type 316 stainless steel (it offers improved corrosion resistance) has been designated as Type D319 by the American Iron & Steel Institute.

Comparison: The new alloy contains 2.25 to 3 per cent molybdenum (Type 316 has none), more chromium (17.5 to 19.5 per cent, vs. 16 to 18 per cent), and slightly more nickel (11 to 15 per cent, vs. 10 to 14 per cent).

Many modifications of Type 316 within the analysis range of the new alloy have been used by the chemical industry for 15 years. Demand for a code approved, commercially available standard alloy of this type was established by a survey of the Chemical Industry Advisory Board of the American Standards Association.

The letter "D" identifies it as a development alloy. When sufficient demand develops, the designation will be changed to AISI Type 319. A tonnage survey is scheduled to be made next year.

No matter what you make from Cold Rolled Steel

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Thinking of making a Bi-Plane-O-Car? You might find a terrific market for this all-in-one get-about. But you might find unusual production problems, too. Better call your A.W. Representative *before* you start to produce. Your A.W. Representative may order a special metallurgical study of your problems and bring about savings that build new profits and increase production. He can provide you with the latest information on cold rolled steel and its application, plus experienced advice on the gauge, size and type to order. Call him today. Your A.W. Representative is always available . . . never out of touch with your location.

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Hot rolled strip
Cold rolled sheets
Cold rolled strip

ROLLED STEEL FLOOR PLATE
A.W. Algrip abrasive
A.W. SUPER-DIAMOND *pattern*

COAL CHEMICALS

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Standard & Hardened

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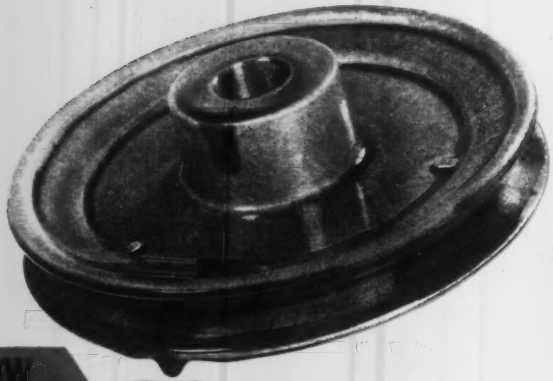
Iron ore concentrates
Iron powder
Crushed stone
Sand

COKE
Foundry, industrial & metallurgical

PENCO METAL PRODUCTS DIVISION
Steel cabinets, lockers & shelving

Du Pont announces a new process . . .

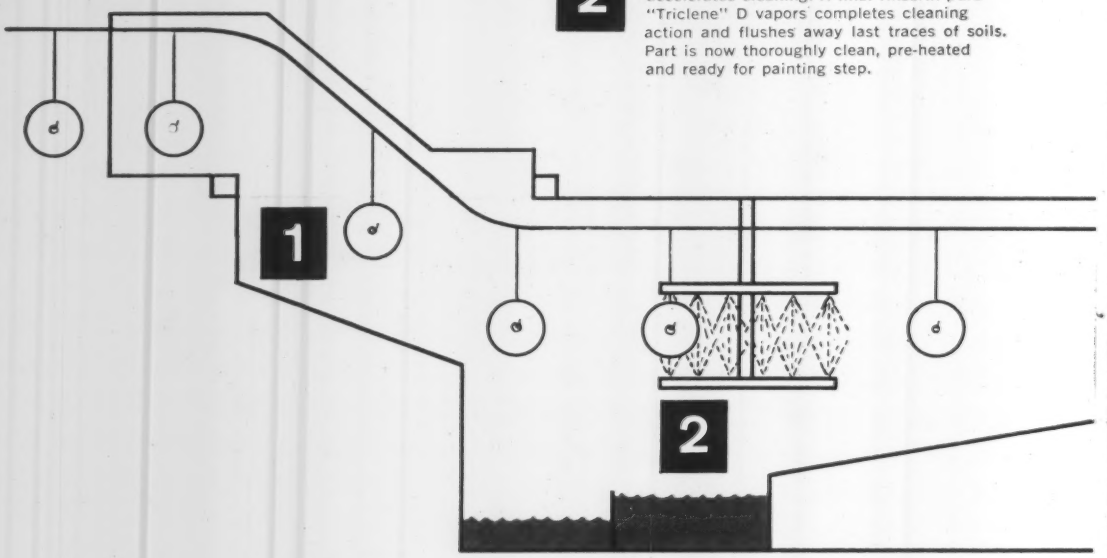
Vapor degreasing and in one compact unit—with



HOW IT WORKS

1 Greasy and soiled pulley wheel (above) enters degreasing section of unit (No. 1 below) after prior fabricating steps. Cleaning action begins as "Triclene" D trichlorethylene vapors condense on cold part.

2 Mechanical action of spray rinse (No. 2 below) accelerates cleaning. A final rinse in pure "Triclene" D vapors completes cleaning action and flushes away last traces of soils. Part is now thoroughly clean, pre-heated and ready for painting step.



Here are the advantages . . .

SAFE: New process uses paints thinned with non-flammable "Triclene" D solvent. Fire and explosion hazard virtually eliminated!

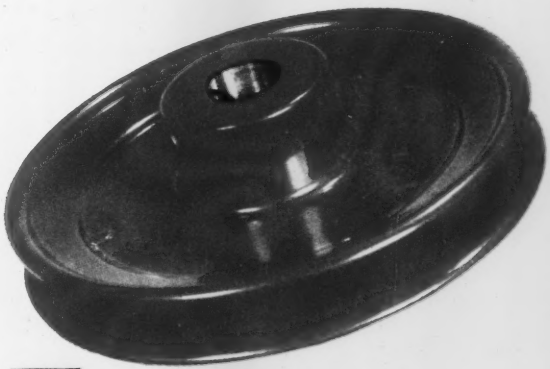
CUTS COSTS: Solvent, overspray and excess paint are fully recovered—drip loss is eliminated. Integrated cleaning and painting with "Triclene" D trichlorethylene cuts labor and utility costs.

ONE COMPACT UNIT: Simplified equipment saves floor space and reduces finishing time. Unit can be easily adapted to fit in with other production steps both before and after cleaning/painting.

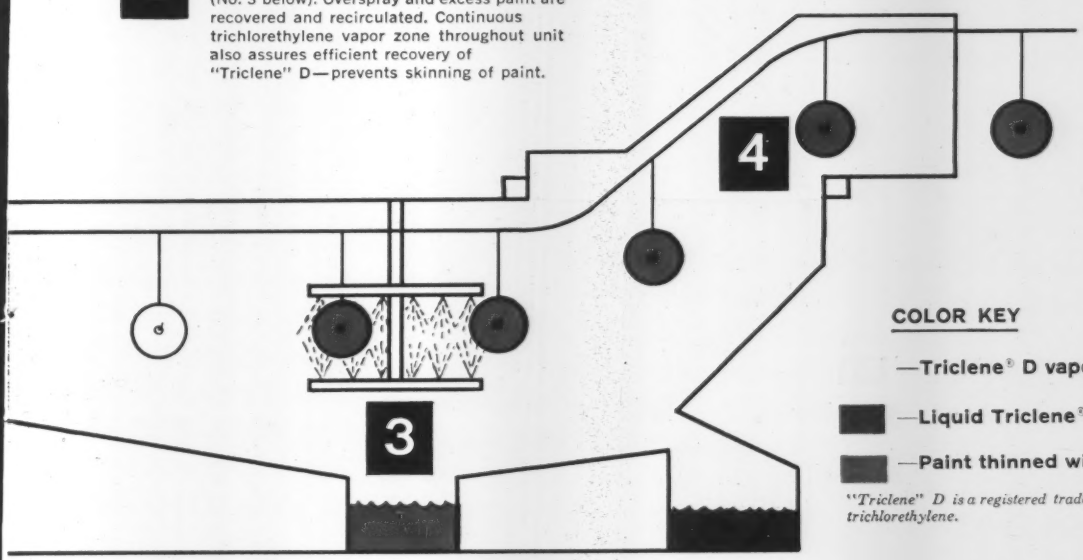
LOW INVESTMENT: No drip pans or spray booths needed. Drying ovens can be eliminated or requirements minimized.

nonflammable painting Triclene® D trichlorethylene

3 Nonflammable paint thinned with "Triclene" D is "flowed" on the part (No. 3 below). Overspray and excess paint are recovered and recirculated. Continuous trichlorethylene vapor zone throughout unit also assures efficient recovery of "Triclene" D—prevents skinning of paint.



4 When lacquer type paints are used, parts emerge from unit (No. 4 below) completely dry and ready for final assembly or packaging. Where curing paints are used, baking can be attained with minimum time and equipment requirements.



COLOR KEY

—Triclene® D vapor zone

—Liquid Triclene® D

—Paint thinned with Triclene® D

"Triclene" D is a registered trademark for Du Pont trichlorethylene.

Technical Report available . . .

Du Pont has prepared a Technical Report describing its new process for integrated cleaning and painting. Included are cost comparisons to help you determine probable cost savings. Get a copy of this Report from your Du Pont representative or your distributor of "Triclene" D trichlorethylene. You can also write to Du Pont, Electrochemicals Dept., Wilmington, Del.

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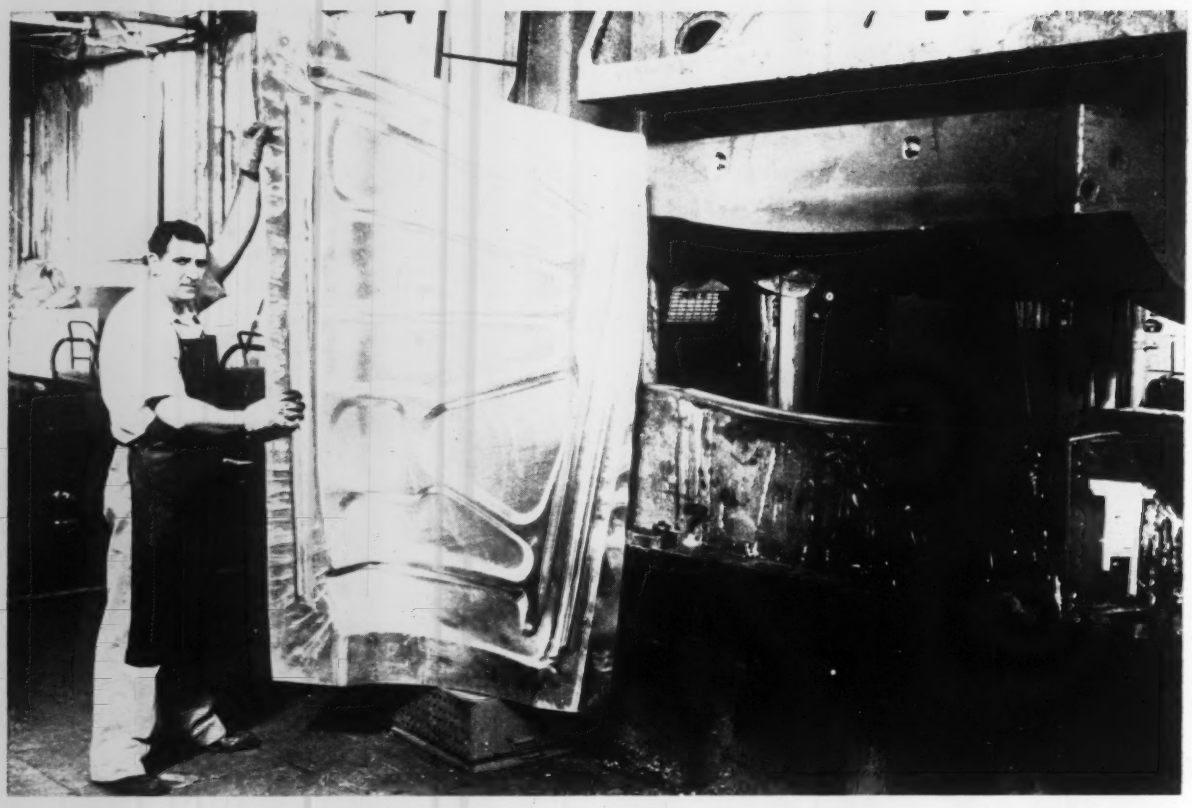


Furane Plastics Inc., Los Angeles.

Biggest savings, say authorities, come with parts like this one—wide pieces with comparatively shallow drafts. This door panel is made at Lockheed Aircraft Corp., Burbank, Calif. Dies can be cast or capped on metal bases

Plastic Tools Gain Cost-Cutting Stature

Users find they're more accurate and durable than ever. Better formulas make it possible to increase thickness of castings. One firm makes plastic surface plates

ARE you using plastic tooling to its full potential?

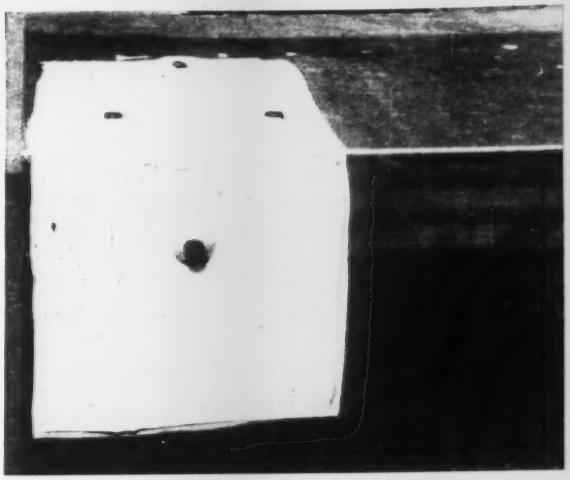
Many cost-conscious companies are finding new applications as they look for ways to trim costs, layout expense, machining, and weight. Among the significant developments are formulas which make large castings easier to fabricate.

A pitch-line holding fixture for a gear is a good example (see illustration, Page 139).

It is used to support the part for final grinding of the shank of a special gear profile. The finished fixture, including metal frame and supporting elements, cost about $150, about 15 per cent less than a similar metal fixture.

The machine shop foreman was able to use an accurate prototype in fabricating the fixture because plastics don't require shrinkage allowances. The fixture was made of a tough plastic (Furane's Epocast 11 D is an example) which has a

Holding fixture of cast epoxy fits pitch line of gear in foreground. Bell Aircraft Corp., Buffalo, uses it to finish grind shank. Complex forms are easier to make



Furane Plastics.

Drilling fixtures can be exceedingly simple. This example used the part (a ventilating duct) for a form by spotting drill bushings and laminating reinforcing and epoxy resin

slight "give" to accommodate minor dimensional variations.

• **Saves Layout**—You can duplicate sheet metal parts with a laminating technique and save expensive setups to drill or attach small parts.

One firm wanted to accurately spot several holes at odd angles on some ducting. Pins or studs were positioned on the sheet metal conduit at the correct angle to support drill bushings. The surface of the conduit was coated with a releasing agent (like wax) to prevent sticking. Laminating resin was applied to three layers of glass cloth and around drill bushings. Time required: 1 manhour.

The firm could have used stiffeners of wood, honeycomb, or glass roving for additional reinforcement. A gel coating ahead of the laminating resin would improve appearance.

Such a tool will set tack-free in a couple of hours and be ready for service in about 12 hours. If you need it sooner, heat will cure it in a few minutes.

• **Reducing Machining Time**—You have your choice of several fabricating methods. They may involve laminating, solid castings, or capping metal weldments or castings.

A more liberal use of material can often circumvent more expensive lay-up time because revolutionary developments in epoxy casting materials make larger castings possible.

For many years, aircraft people used lead or zinc alloy castings which were machined and ground to size. Hundreds of hours were needed for the larger tools.

Cost savings were substantial when it became possible to use the rough casting without grinding or machining. The secret is a layer of epoxy 1 to 2 in. thick cast between an accurate plaster and the metal.

On the punch side, a semiresilient material with a Shore D hardness of 50 to 60 works best; on the die side, a harder compound is used. The punch accommodates metal thickness. Plastic drop hammer tools cost 20 to 25 per cent of their all-metal equivalents.

• **Autos**—High impact tools help set radiuses of fabricated steel parts. Such parts can be drawn and shaped by conventional methods, but a final "spanking" by a plastic-capped tool reduces wear and tear of regular equipment.

Combinations of epoxies and metal fibers are among the newer improvements that upgrade surface strength and wearability. They last much longer than the usual epoxy formulas. But additional fabricating expense must be considered.

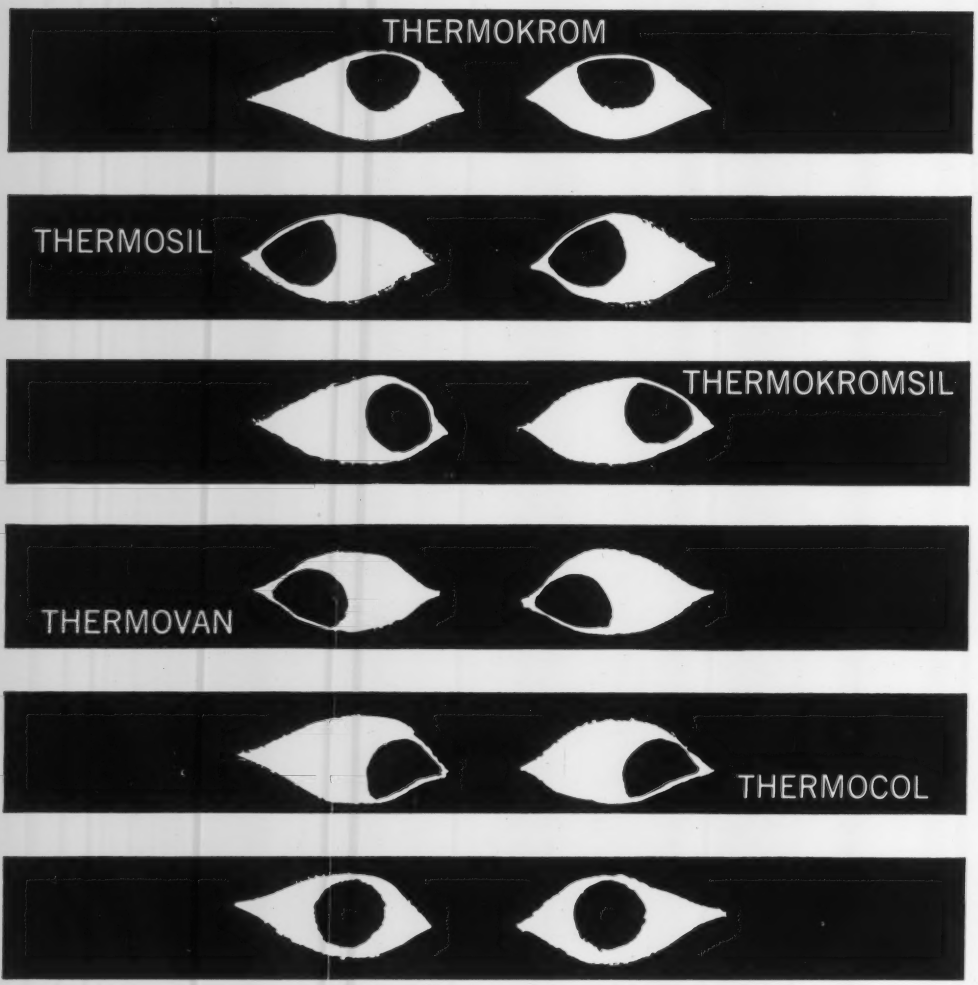
• **Saving Weight** — Epoxy tools, cast or laminated, are about one-sixth the weight of their steel counterparts. Weight savings show up many ways. One major machine shop has several tooling bars, several feet long, made of laminated epoxies and honeycomb reinforcement. Handling the old tool required several men and a pulley. A single toolmaker can position the epoxy unit.

• **Outstanding Example**—Rohr Aircraft Corp., Chula Vista, Calif., fabricates and casts master surface plates for its machine shop. One has been in use for five years.

A steel weldment is positioned above a standard toolmaker's surface plate which is waxed to prevent sticking. New surface tables are produced at a fraction of the cost of grinding a slab of tool steel.

Rohr people point out that a granite table 12 by 6 by 2 ft weighs 7 tons. The epoxy duplicate weighs under 400 lb. Over-all tolerances are within 0.003 in. Toolmakers often scribe layout lines in the surface which are later removed by resurfacing with more plastic.

• **Precautions**—Good as they are, epoxies are no substitute for adequately designed tools, warns Furane Plastics Inc., Los Angeles. Proper draw rings and good radius supports are as necessary on plastic tools as they are on their heavyweight cousins. The most spectacular savings are noted on pieces with broad, shallow surfaces. As the draw gets deeper, your need for a conventional approach becomes greater.



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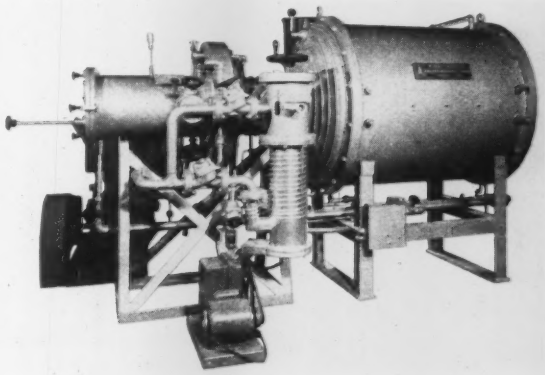
Internally Heated Vacuum Furnace Has Many Uses

This horizontal production furnace has a 12 x 18 in. oven-heated zone and operates up to 3000° F. It is designed for heat treating, annealing, brazing, and sintering.

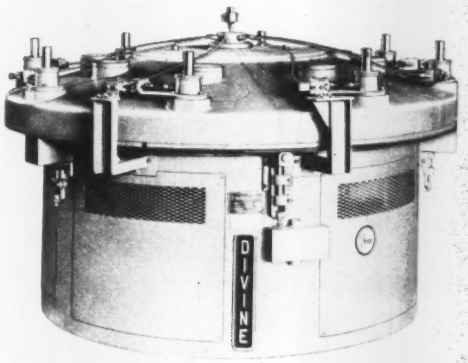
The unit is resistance heated by special dual zone, molybdenum cage-type elements.

The heat shield's low mass permits rapid heating and cooling rates (about 1½ hours to 3000° F with 50 kw input).

This unit is supplied with power supply, necessary control thermocouples, work thermocouple in cold zone, vacuum pumping equipment, and separate control cubicle containing vacuum and furnace instruments. *Write*: High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.



Rotary Conveyor Has Cast Magnesium Dial Plate



This indexing type, RV-X rotary conveyor is intended for use with polishing, buffing, or brushing head units. It consists of a 72-in. diameter table containing eight fixture spindles on a 66-in. diameter center line.

All mechanism is enclosed in the heavy structural steel base. Height to the top of the fixture spindle is 42 in. maximum.

Made of cast magnesium for lightness, the dial plate is accurately machined to receive fixture spindle assemblies. The indexing rate is controlled by an automatic timer, providing a variable range of indexes.

Two-fixture spindles are always in the loading station where they are idle. Dial index rate is 120 to 1000 an hour, fixture spindle speed is 12 to 100 rpm. *Write*: Divine Brothers Co., Utica, N. Y. *Phone*: 4-7174

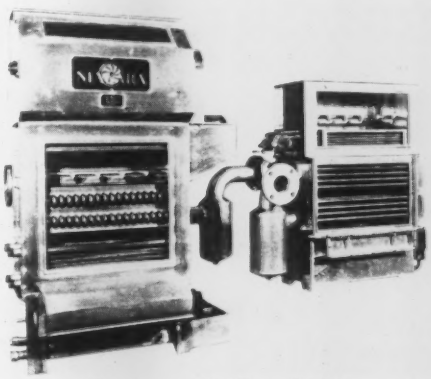
Compressed Air Processed for Exacting Requirements

An aftercooler and compressed air chiller in series provide dried, cooled, and cleaned compressed air for instruments or controls.

Industrial or chemical processes where the presence of moisture, dirt, or lubricating oil is undesirable or damaging are other suggested applications.

In its first stage, the unit reduces the air temperature and removes moisture, oil, and dirt that has been condensed from the compressed air. Refrigeration is used in the second stage to cool and further dry the air.

A typical installation produces 45° F air at 90 psi, needing only 5 tons refrigeration for 90 cfm free air. Air moisture is reduced to 0.065 lb per 1000 cu ft. *Write*: Niagara Blower Co., 405 Lexington Ave., New York, N. Y. *Phone*: Murray Hill 6-5363



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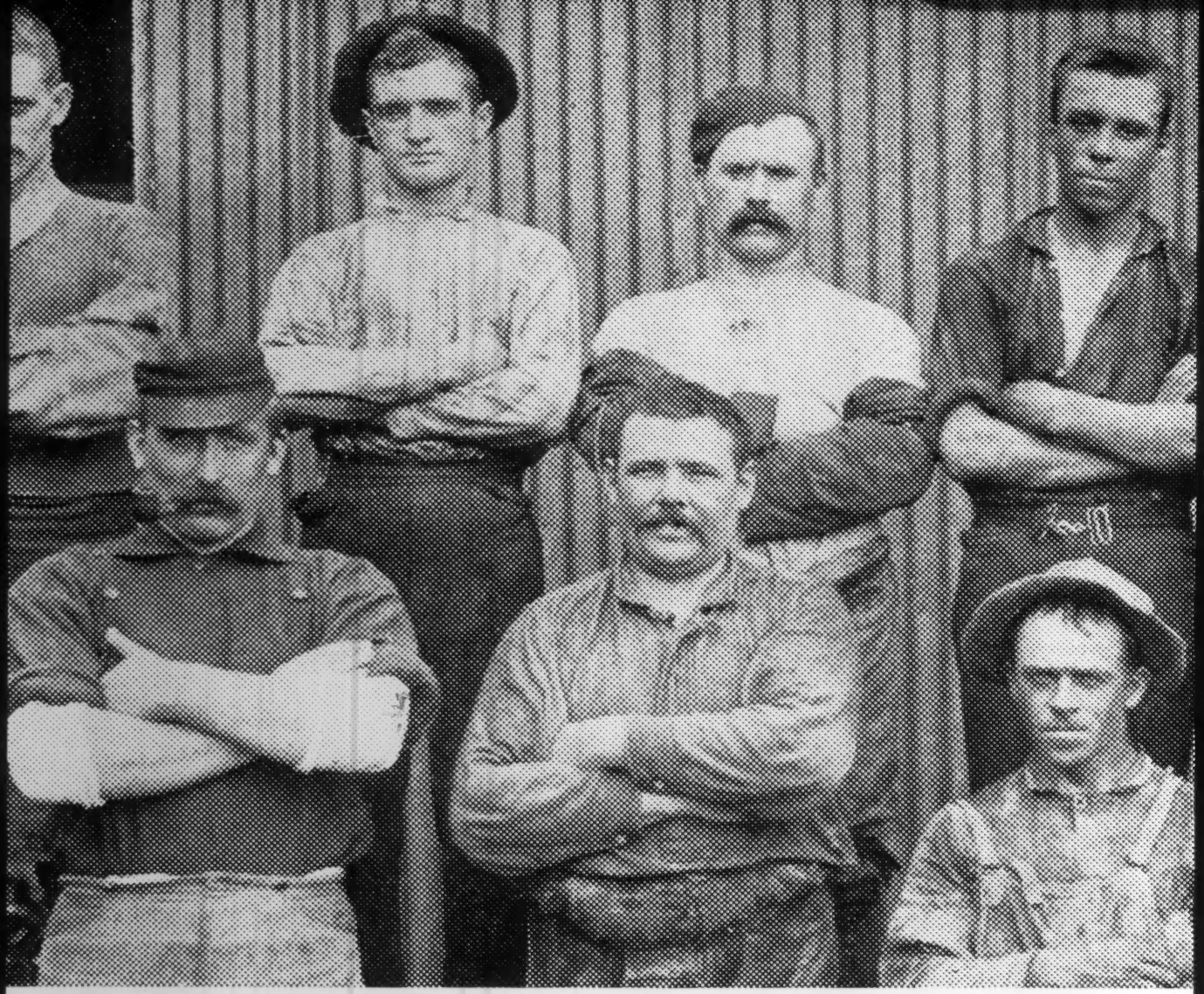


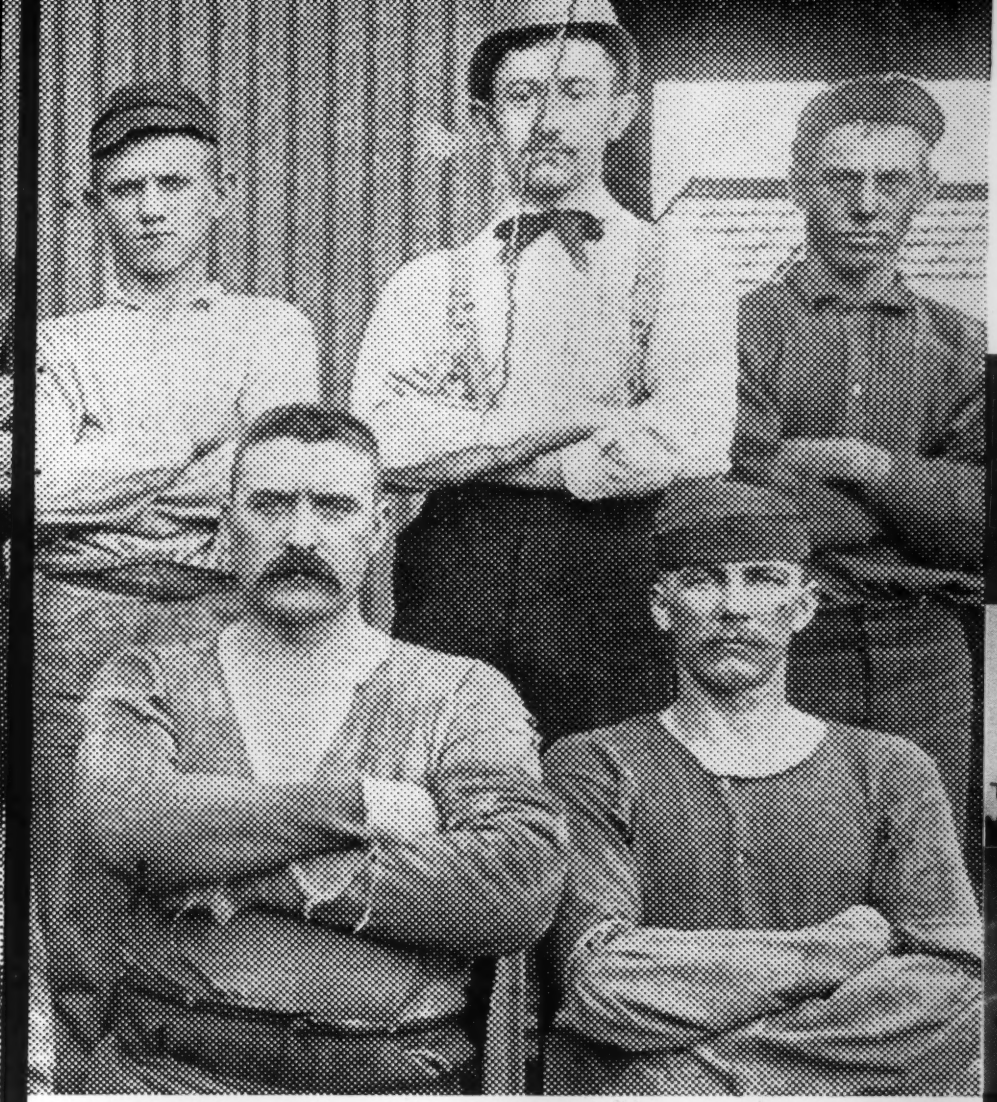
management problem

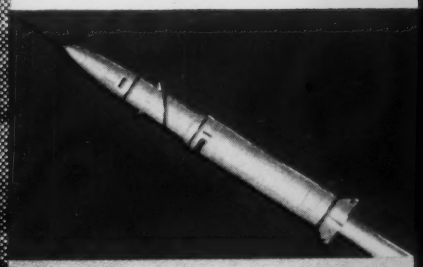
Back in 1898, Tom Corbley *(front row, left)* and his Melting Crew were a proud and imposing lot. The Spanish-American War was on. And the nation's eyes were focused on the unique little mill in Reading, Pa., that was busy turning out the world's largest production of newly-discovered, armour-piercing projectiles.

Since 1898, the spectre of Tom Corbley's crew has presented a problem to *Carpenter* management that has been almost 70 years in the solving—how to apply the skills and pride of workmanship exemplified by Corbley's men, to the formulation, the production, and then the mass-production of the world's finest specialty steels.

Today the problem is solved. But it was a gradual process. Because *Carpenter* was born a small Mill, it has been free to grow slowly—to maintain purest quality in every pound of specialty steels it released to industry. Quality . . . and only the finest quality . . . before mass-production.

Today, both are possible. With the acquisition of steelmaking facilities in Bridgeport, Conn., *ingot tonnage capacity has*





ingot tons capacity doubled to meet the needs of fast growing industries

1950 1958

been doubled almost overnight. Additional electric arc melting furnaces, rolling mills, new annealing and heating furnaces, and other finishing equipment . . . each with *Carpenter's* unique quality controls . . . started operating in the past year.

In the years ahead, *Carpenter* will continue to grow—to keep pace with the ever-increasing demands of industry—for the world's finest specialty steels.

tool and die steels
stainless steels
electronic and magnetic alloys
special-purpose alloy steels
valve, heat-resisting and super alloy steels
tubing and pipe
fine wire specialties

Carpenter steel

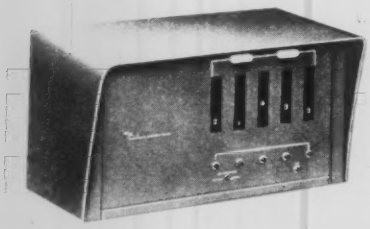
The Carpenter Steel Company, Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.
Webb Wire Division, New Brunswick, N. J.

NEW PRODUCTS and equipment

Counts in Two Directions

A decimal electronic counter employs a logical scheme which allows indication of true positive and negative numbers, with a single zero. The range is ±99999 counts.

Each decade may be set to a predetermined value independently of



the other decades and the entire counter may be reset to zero by operation of a single contact.

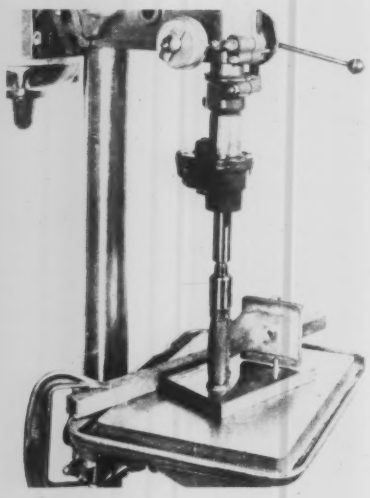
It can be used to check acceleration, velocity, position, or temperature. *Write*: Benson-Lehner Corp., 11930 Olympic Blvd., Los Angeles, Calif. *Phone*: Bradshaw 2-3484

Device Adds Drill Power

This attachment permits machine tool operations that require slow speeds and positive drive on a 20-in. drill press.

The Slo-Speed provides smooth, high torque, power transmission for a variety of operations such as spotfacing, reaming, counterboring, and core drilling.

Using the five-pulley drive, the range is 70 to 1700 rpm with a 1140 rpm motor, and 105 to 2600 rpm with a 1725 rpm motor. *Write*: Delta Power Tool Div., Rockwell Mfg. Co., 496 W. Lexington Ave., Pittsburgh 8, Pa. *Phone*: Churchill 1-8400



Cylinders Are Versatile

Hydraulic cylinders for industrial applications are assembled from five standard rod ends and two head ends to suit needs.

They come in a wide range of styles. Working pressures of 1200 to 3000 psi are offered with intermittent pressures up to 4000 psi tolerated in some double-acting cylinders. *Write*: Wooster Div., Borg-Warner Corp., Wooster, Ohio. *Phone*: Howard 2-2010

Furnaces Improved

These combustion tube furnaces meet the requirements of all combustion tube methods of carbon and sulfur analysis on ferrous, nonferrous, and petroleum samples.

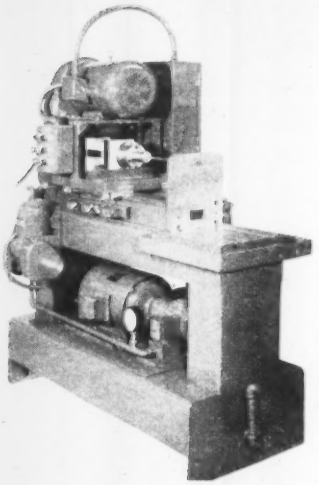
They provide low cost dependable operation at continuous temperatures up to 2650° F.

The units are available in one-tube and two-tube models and are adaptable to 1, 1¼, and 1½ in. combustion tubes. *Write*: Laboratory Equipment Div., Lindberg Engineering Co., 2444 W. Hubbard St., Chicago 12, Ill. *Phone*: Monroe 6-3443

Drills Deep Holes

This machine does gun drilling on commercial parts. Its precision spindles are capable of running at 250 to 10,000 rpm.

If a hard spot is encountered, a built-in slippage causes the mechanical feed to slow down.

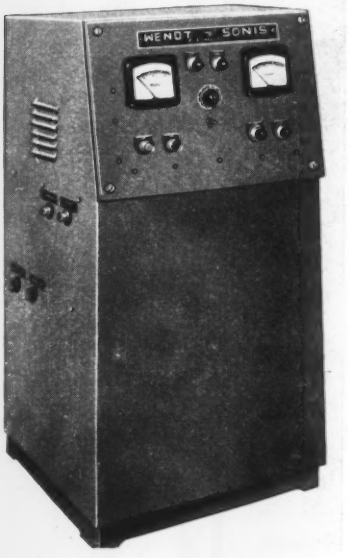


The spindle slide is operated by a screw from a pick-off feed box with a range of 0.3 to 40 ipm. A rapid traverse of 225 ipm is provided in both directions. *Write*: Gerrad Co., 10819 Copeland Ave., Box 26, Hales Corners, Milwaukee County, Wis.

Device Aids Grinding

The Econogrind is a liquid cooled, electrical assist for grinding equipment and techniques, old or new. Advantages cited: 1. Low cost due to its adaptability to present equipment. 2. Little operator training required.

The process is designed to reduce diamond wheel consumption, produce good finishes of 6 to 8 microinches rms, require less grinding pressure. Because it is a cold, low



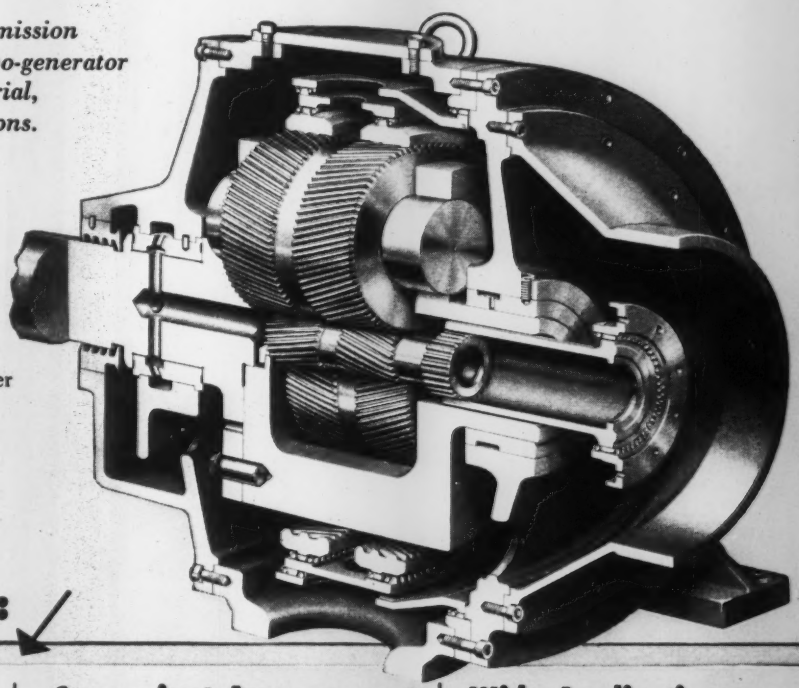
DE LAVAL-STOECKICHT
PLANETARY GEAR

...for high speeds...high horsepower

Proved in hundreds of installations abroad totalling over 3,000,000 horsepower—now available in America!

For all high torque power transmission applications such as pump turbo-generator and compressor drives in industrial, municipal and marine installations.

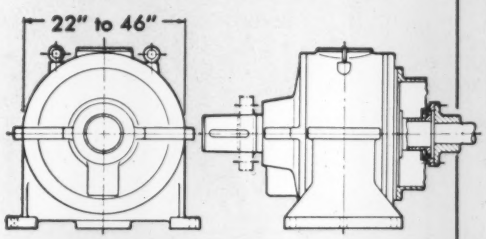
This cutaway view of the De Laval-Stoeckicht Planetary Gear shows how it provides flexibility for proper load distribution throughout the gear members. The thoroughly proved and tested design is completely reliable in transmitting high horsepower for high speed applications. • Highest efficiencies (98% or higher)...no high speed bearings...less friction losses.



Check These Advantages:

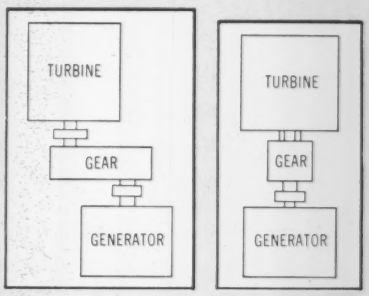
Small Size—Light Weight

Compact—low weight per hp. Sizes range from 22" to 46" in diameter, depending on horsepower requirements. Example: 5000 hp planetary unit weighs 1700 lbs. against 6000 lbs. for conventional gear.



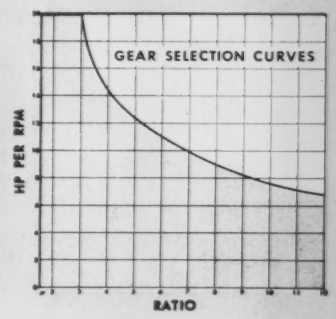
Convenient Arrangement

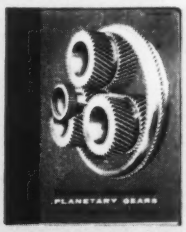
Co-axial or "in-line" arrangement of gear members takes up far less space than parallel axis gears of equivalent horsepower rating.



Wide Application

Capacity range shown in shaded area on chart below. For other applications, contact your De Laval Sales Engineer.





For further details, write for Bulletin 2400.

DE LAVAL *Steam Turbine Company*

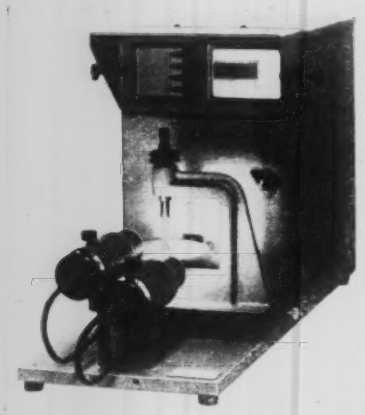
860 Nottingham Way, Trenton 2, New Jersey

DL4D1

voltage process, it reduces or eliminates grinding cracks and checks. *Write*: Wendt-Sonis Co., Hannibal, Mo. *Phone*: 834

Device Shows Dual Image

To overcome the disadvantages of a single view projector for co-ordinate checking, this projector provides two simultaneous images through separate optical systems.



Effects of adjustments in one plane are immediately apparent in the second plane. This affords faster, more accurate checking without resetting the part and repeating adjustments.

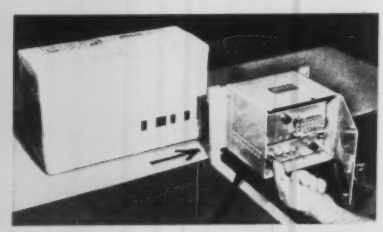
Screens to accommodate various magnifications and part sizes range from 3 x 3 in. square to 20 in. in diameter, with separate screens for each view or both images appearing on a single screen. *Write*: Stocker & Yale Inc., Marblehead, Mass.

Selects Cartons Rapidly

Automatic selection of packaged goods is done quickly by the Model 410 Carton Selector. Any case, box, or carton is handled by means of a five-bar code that is printed on the side.

Up to 30 items may be counted and sorted. The device also provides an output signal that can be used to control work flow for further processing, carton sealing, storage, or automatic palletizing.

The coding is included with normal carton printing. *Write*: Atronic Products Inc., 1 Bala Ave., Bala-Cynwyd, Pa.



Handling Made Easy

The manual Lift-and-Roll material handling unit can be used with crated or skid-mounted objects that weigh 1 ton or more.

Lifting is done through a system of eccentric axles. The operating lever is locked in place to prevent the load from dropping. *Write*: Special Machine Co., Winsted, Conn. *Phone*: Frontier 9-3846

Vacuum Pumps Improved

Increased capacity and volumetric efficiency, low power requirements, improved gas ballast to minimize oil contamination, and more compact design are to be found in the "H" series of the Microvac rotary vacuum pump.

Every pump is dynamically balanced, incorporates a belt guard for maximum safety, and has an automatic lubrication system. *Write*: F. J. Stokes Corp., 5500 Tabor Rd., Philadelphia 20, Pa. *Phone*: Cumberland 9-0100

Controls Industrial X-Ray

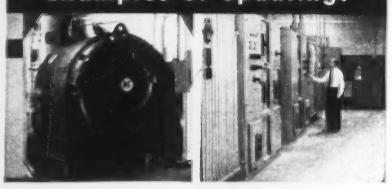
A 150-250 kv industrial x-ray control can produce clearly defined images through $\frac{1}{8}$ in. of aluminum or 4 in. of steel. It offers a range of 30 to 250 kv and is provided with a 150-kv transformer, or it can be

NEW brochure of ideas for modernizing

This booklet is based on the premise that modernization can start anywhere in your plant. It can be a single machine or operation . . . a better way of getting variable speed . . . a faster way to braze . . . or a newly available replacement. In fact, this type of updating is far more common than the sweeping change.

Get a copy of "59 ideas for modernization in '59" from your nearby A-C office or write Allis-Chalmers, Industries Group, Milwaukee 1, Wisconsin.

Examples of updating!



New motor development may eliminate premiums you've been paying for specially protected motors.

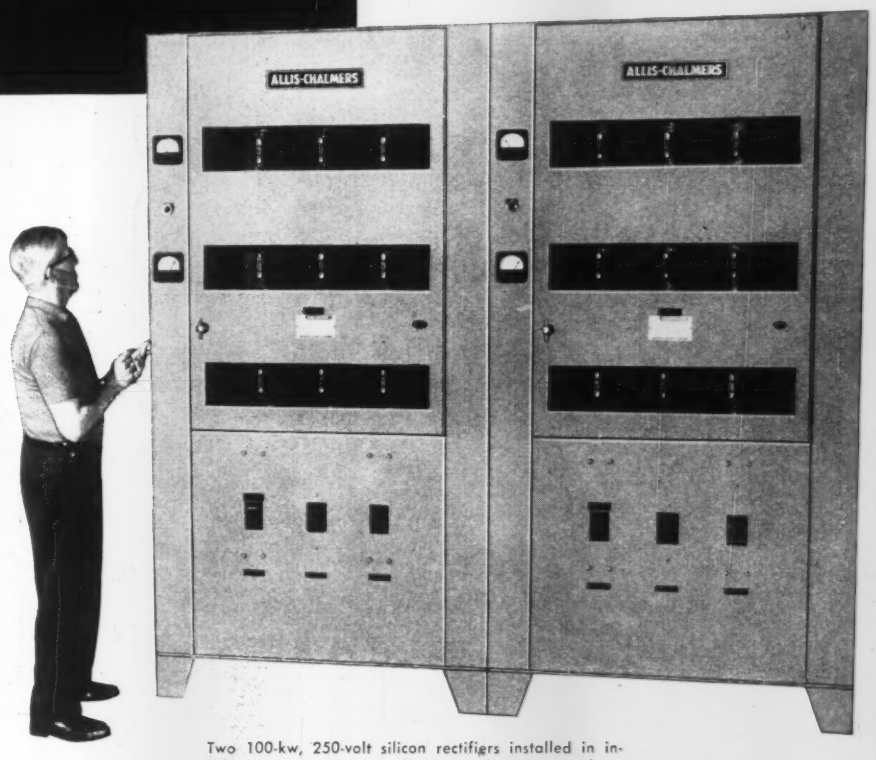
Electrical modernization includes placing substations close to machines being served.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

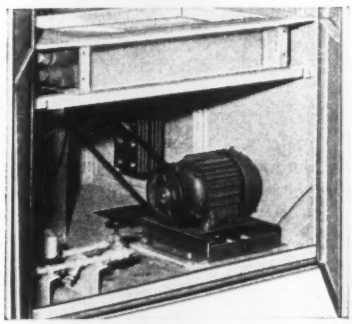
A-5850

SEMI-CONDUCTOR RECTIFIER



Two 100-kw, 250-volt silicon rectifiers installed in industrial service. Semi-conductor rectifiers are simple in operation and maintenance, require little floor space.

Plan to stay ahead... MODERNIZE!



Effective cooling — closed recirculating air system features air-to-water heat exchange and delivers same amount of cooling air to each diode. Air is sealed in. Direct air cooling system also available.

Only application experience like this can give you highest conversion efficiency

High power conversion efficiency at low cost is the major advantage of the semi-conductor rectifier. But this high efficiency — as high as 95% — can be obtained only when the unit is *correctly applied*.

Allis-Chalmers 30 years of experience in developing, manufacturing and *applying* rectifiers assures you of the highest conversion efficiency. This background of experience, plus vast research and engineering facilities, is available for a thorough analysis of your requirements. Then, specific, unbiased equipment recommendations are made — dictated solely by your requirements — because Allis-Chalmers makes all types of rectifiers.

Every semi-conductor rectifier installed by Allis-Chalmers has performed to the complete satisfaction of the user. Your local A-C man can tell you how a semi-conductor rectifier can be applied profitably to your operations. Call him. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

A-5817

NEW PRODUCTS and equipment

used as a 250-kv control when coupled with a 250-kv transformer.

Current is variable from 5 to 20 milliamperes and is automatically stabilized to meet line voltage variations. Overload or overvoltage automatically stops the instrument. *Write*: X-Ray Dept., Westinghouse Electric Corp., P. O. Box 416, Baltimore 3, Md. *Phone*: Plaza 2-0300

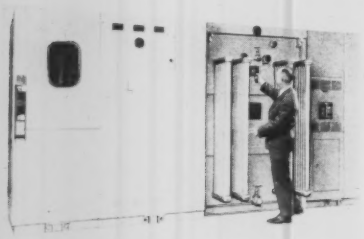
Cab Has Full Visibility

An operator's cab with full visibility and room for comfort is offered as optional equipment on Yale G-3, gasoline-powered lift trucks (capacity: 15,000 to 20,000 lb).

More than 40 sq ft of heat resistant, safety glass surround the operator. The cab can be entered from either side through sliding doors. In hot weather, the rear window can be swung out. *Write*: Yale Materials Handling Div., Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa. *Phone*: Orchard 3-1200

Substations Packaged

Transfo Units are pre-engineered load centers for stepping down primary voltages.



They meet electrical distribution needs in industrial or commercial applications economically. No engineering time is required and installation time is cut to a minimum. *Write*: Transformer & Rectifier Div., I-T-E Circuit Breaker Co., Philadelphia 30, Pa. *Phone*: Locust 7-1420

Gage Uses Radiation

The Gammascan uses gamma radiation to measure the thickness and density of materials such as light metals, or steel more than 1 ft thick.

Its high rate of response (in milliseconds) permits use on a continuous production line.

Applications cover a wide variety of products. Examples: Rolled sheet steel, extruded forms, and solid fuel

for missiles. *Write*: Nuclear Systems Div., Budd Co., 2450 Hunting Park Ave., Philadelphia 32, Pa. *Phone*: Baldwin 5-9100

Device Orients Parts

This packaged roll orientator is an aid to the feeding of headed or slightly tapered parts.

It aligns 100 per cent of the parts fed without rejects, regardless of position at discharge, and it can be used to inspect parts by dropping those undersized.

Equipped with a photoelectronic control, the feeder supply remains constant without overloading. It can be used for various shaped parts that will hang vertically, and it is extremely adaptable for feeding fragile ones without scratching or breaking them.

The unit can easily be adjusted to handle various sizes. *Write*: Automation Devices Inc., 3125 Brandes St., Erie, Pa. *Phone*: 4-6329

Unit Forms and Shears

The Model U-10 universal shearing and forming machine is the largest in the Pullmax line, having an edge cutting capacity of 13/32 in. in mild steel. (Range: 350 to 1800 strokes a minute).

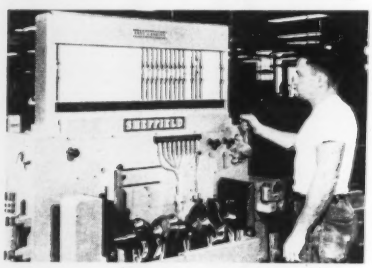
The machine has attachments for heavy duty pneumatic circle cutting and quick locking straight cutting.

The upper tool raises and lowers automatically, freeing the operator's hands. *Write*: American Pullmax Co. Inc., 2455 N. Sheffield Ave., Chicago 14, Ill. *Phone*: Diversey 8-5727

Inspects Three Sizes

With this multidimension Precisionaire gage, the operator inspects three sizes of diesel crankshafts. As many as 47 dimensions and conditions on a part can be checked in the gaging cycle.

Two sets of interchangeable and adjustable tooling with hand-type Airsnaps accommodate the three crankshaft sizes.



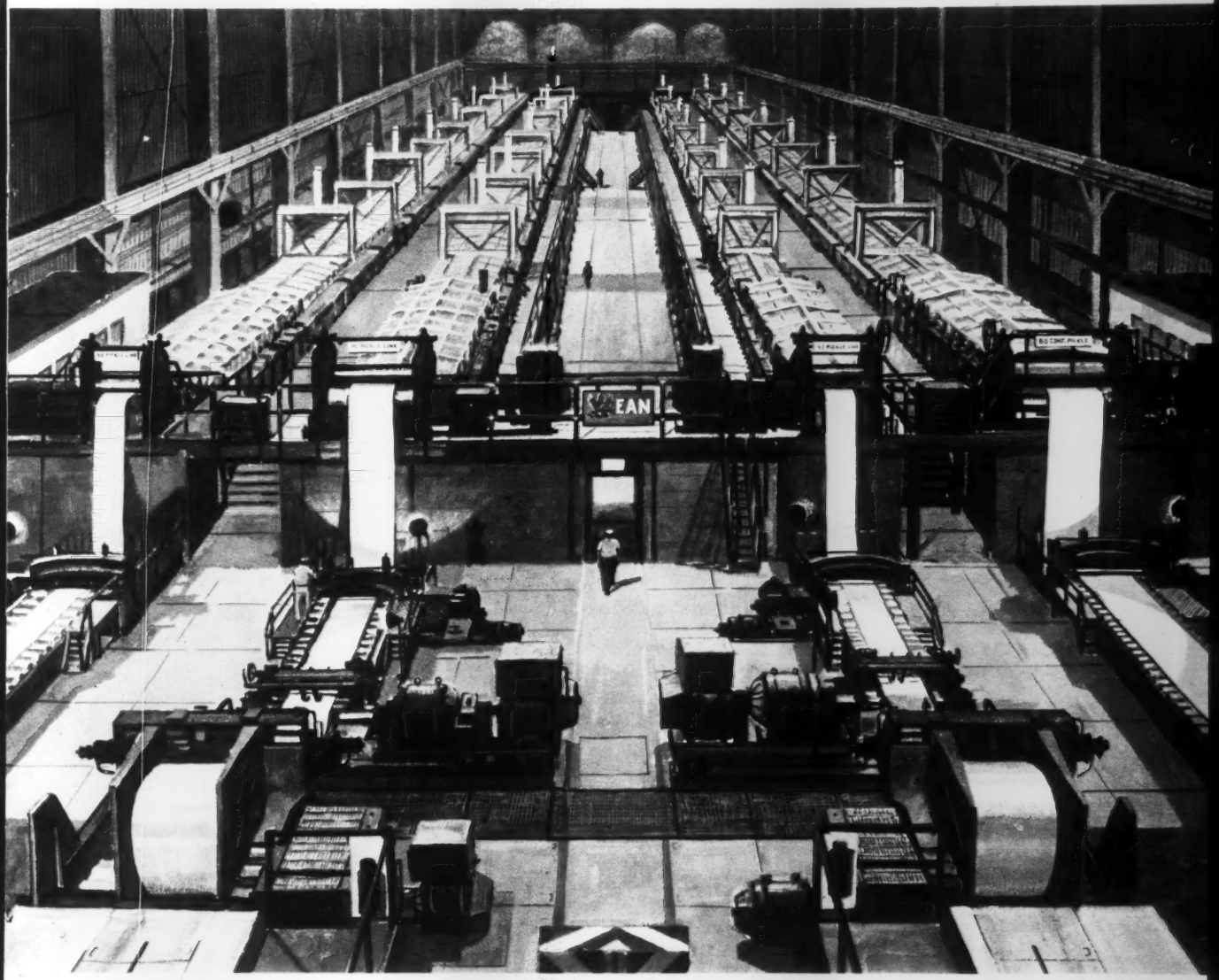
Acceptable dimensions or amount of oversize or undersize are instantly shown by the position of the floats in the 34-column instrument. *Write*: Sheffield Corp., Dayton 1, Ohio. *Phone*: Clearwater 4-5377

Unit Checks Gear Leads

The 1218A Checker does away with the skill and labor involved in manual checking of gear leads. No special training is required and calculations are virtually eliminated.

Although designed for external and internal helical gears and spur gears, it also checks right-hand or

Wean, Gary and Pickling...



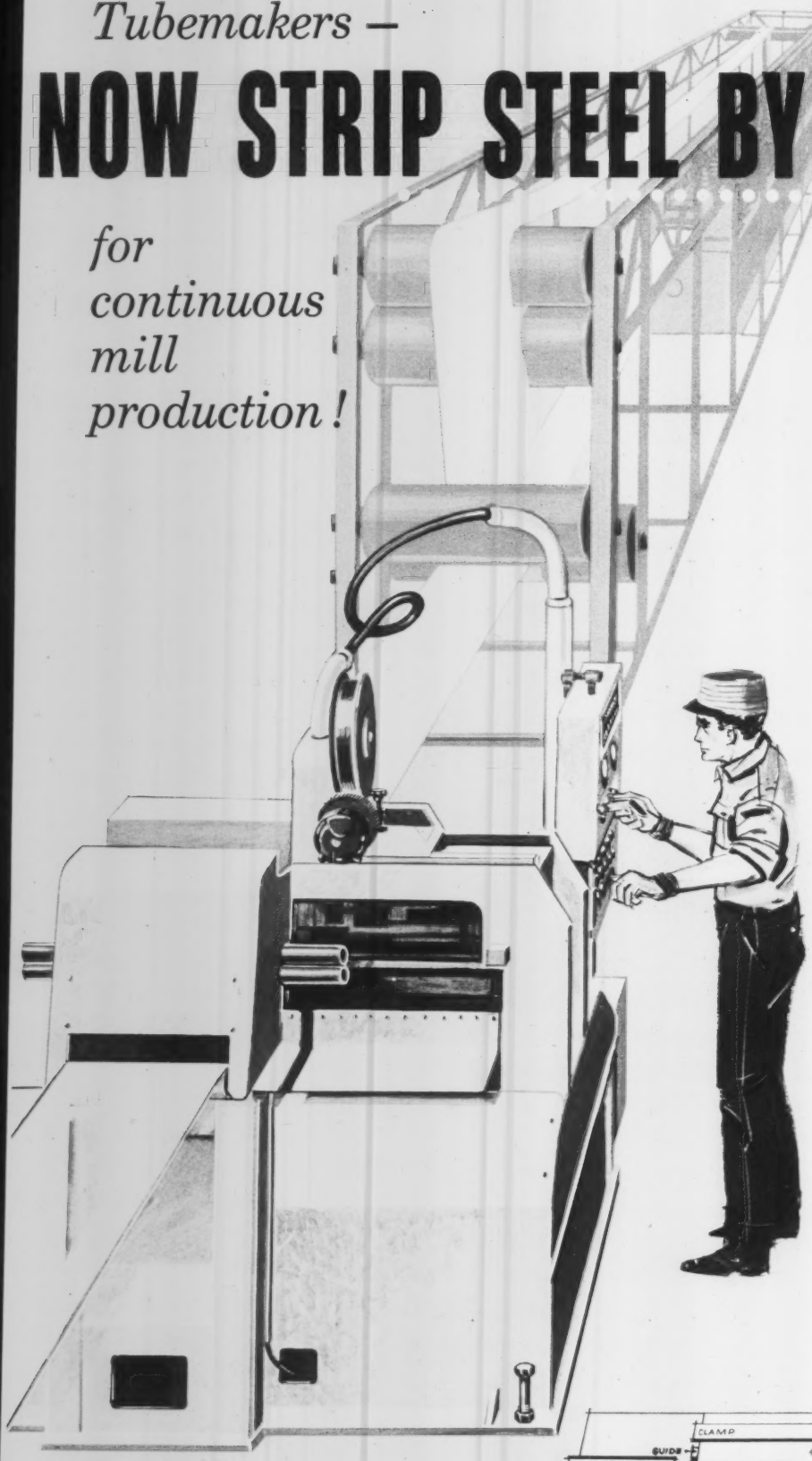
Automation, which has become the magic word of industry in the past few years, has been a reality in the steel industry for many years. As a pioneer in the development of continuous steel processing lines, Wean has engineered and installed over 60 continuous pickling lines for leading steel producers.
In this Gary plant of U. S. Steel, these four pickling lines are typical of Wean's steel mill automation.
From coil holder to finished mill product . . .
sheet, tin and strip processing is faster, better, through . . .
Wean Creative Engineering.

THE WEAN ENGINEERING COMPANY INC. • WARREN • OHIO

Tubemakers –

NOW STRIP STEEL BY THE MILE

for continuous mill production!

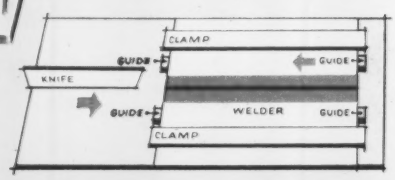


The "MPM SHEAR WELDER" is "a natural" for increasing output and reducing coil end scrap loss.

Perfect welds are a result of positive guiding and clamping, right at the weld area. *(See diagram below.)* Both shearing and welding are done at the same station.

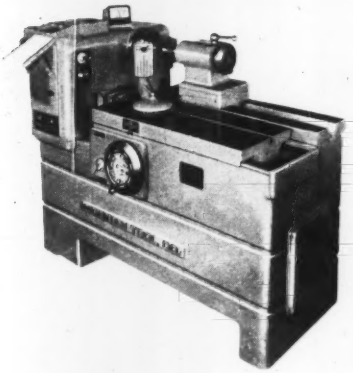
The "MPM" is the fastest, most accurate and compact machine of its kind, that's why tubing manufacturers prefer them over any other type. They are available in a complete range of sizes for any tube mill application. Other types are available for joining strip or sheets of any metal.

Metal Processing Machine Co.
Subsidiary of The McKay Machine Co.
YOUNGSTOWN, OHIO



10092

NEW PRODUCTS and equipment



left-hand leads on herringbone or worm gears.

The instrument handles work up to 18 in. in diameter with shaft lengths to 24 in. It has a built-in optical system and an internal recorder. *Write*: Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich. *Phone*: Twinbrook 1-3111

Inspects Magnetically

Critical, high level inspection is possible with Sonoflux (magnetic particle) units. They provide positive identification of defects.

The units come in a variety of portable and booth-type machines for nondestructive testing of ferrous materials. *Write*: Peterson Machine Tool Inc., Merriam, Kans.

Blaster Cleans Metal

The low cost Sandy Jet Blaster cleans rust, paint, carbon, dirt, and weld scale to bare metal. It handles large areas or small rust spots in hard-to-reach places.

The blaster operates at 100 to 185

(*Please turn to Page* 155)

CUSTOM BUILT TRADEMARK

Heavy Duty Trailers

For Yard and Factory

◀ **PLATFORM TRAILER** 100 tons capacity. 32 wheels, solid rubber tires pressed on wheel centers. Each wheel turns independently. Four articulated trucks provide both side and end oscillation for walking action. Dual fifth wheel steer on two forward trucks.

EASTON EXPERIENCE covers hundreds of heavy duty trailers with capacity, running gear and steering action designed to suit requirements.

For versatile, economical in-plant movement of heavy loads.

Write, wire or telephone for information.

A-1060

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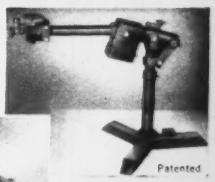
EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

ARONSON Offers You Over 200 PROVEN Standard Stock Models of Quality POSITIONERS "POSITIONEERED" to your exact Requirements

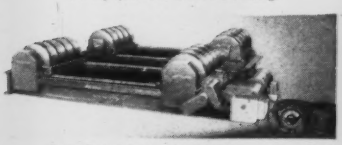
Patented

Aronson TracTred (T. M. Reg.) Turning Rolls for thin walled heavy cylindrical work to 27 tons capacity. Zero to 100 IPM turning speed and Built-In Grounding.

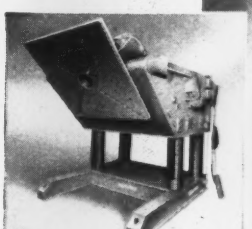
Aronson Universal Balance Positioners (T. M. Reg.) position your weldments effectively, instantly for downhand welding. Capacities to 2000 lbs.



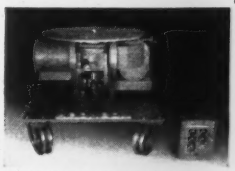
Patented



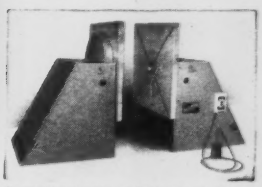
Heavy Duty Precision Built Rubber and Steel Tired Turning and Pipe Rolls. 100% overload protected. Capacities to 600 Tons.



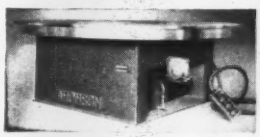
Fully Automatic Gear Driven Positioners, featuring Geared Elevation, 135° Tilting and Variable or Constant Speed Rotation. Capacities to 350,000 lbs.



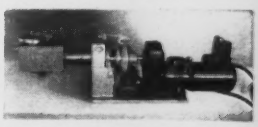
Model D Gear Driven Positioners. Compact, Precise, Rugged. Capacities to 1000 lbs.



Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection. Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.



Heavy Duty Floor Turntables with precision speed control and Magnetic Braking, used for welding, burning, X-raying, etc. Capacities to 120,000 lbs., various heights and speeds.



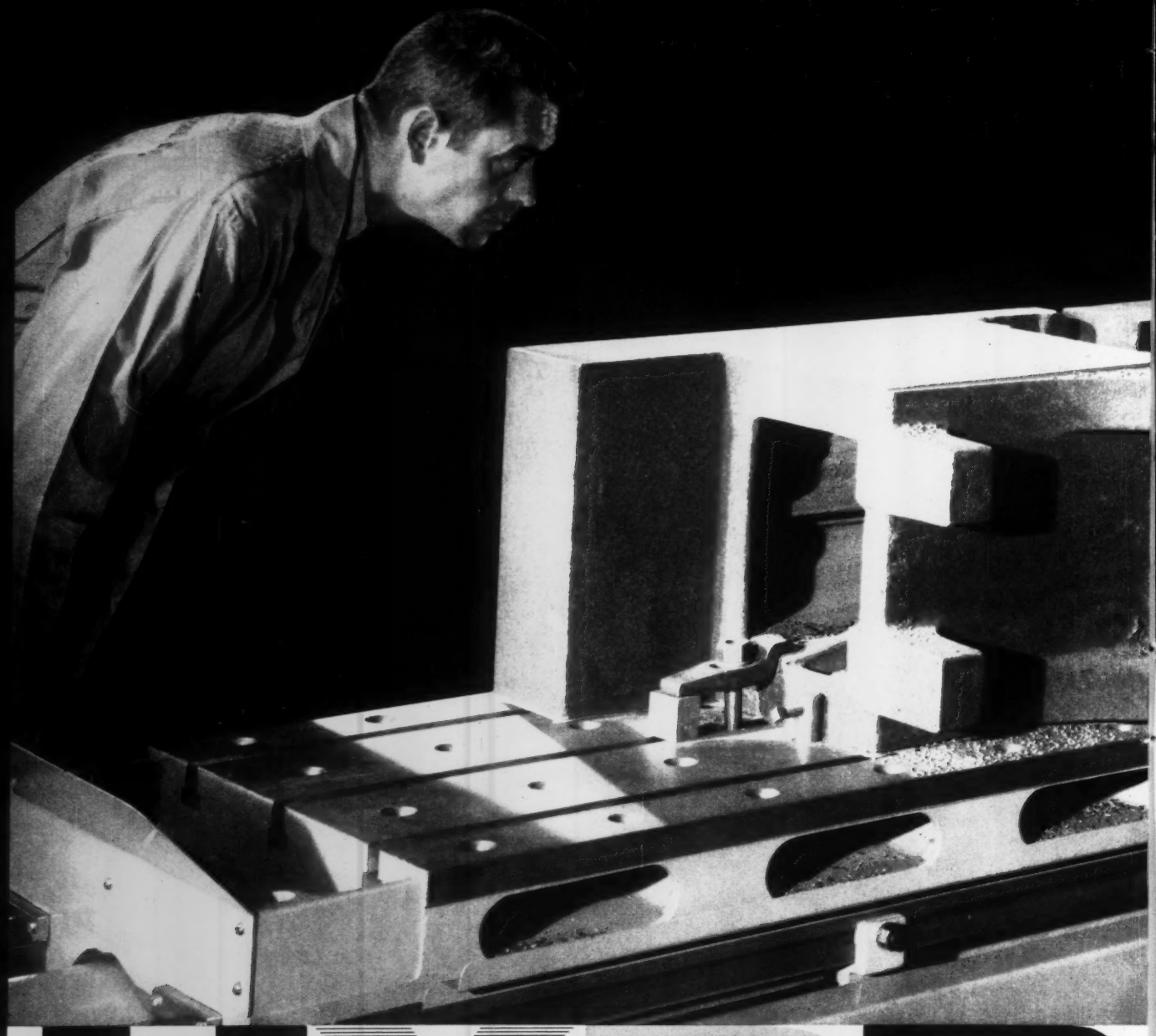
Bench Turntable Automatic Positioners with Mercury Grounding. Capacities to 500 lbs.

Quality POSITIONERS by *Aronson* MACHINE COMPANY
ARCADE, NEW YORK

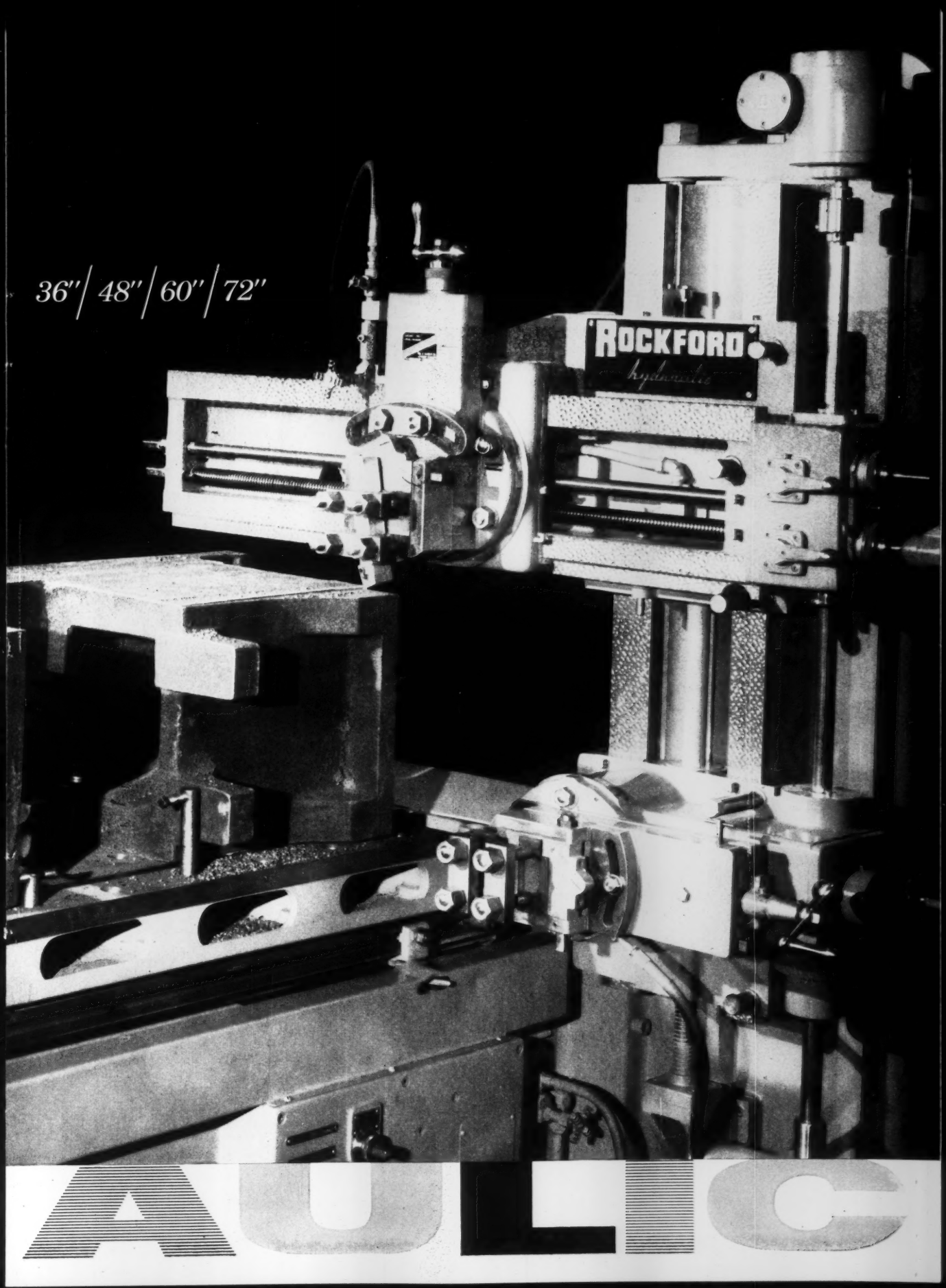
ROCKFORD MACHINE TOOL CO. 2500 KISHWAUKEE STREET ROCKFORD, ILLINOIS

DON'T SPEND BIG MONEY TO DO BIG JOBS!

Put them on a Rockford Hy-Draulic Openside Shaper



HY-DR


36" | 48" | 60" | 72"
ROCKFORD
hydraulic
AULIC

Quantity
PRODUCTION
of
GREY IRON CASTINGS

*

ONE OF THE NATION'S
LARGEST AND MOST MODERN
PRODUCTION FOUNDRIES

*

ESTABLISHED 1866

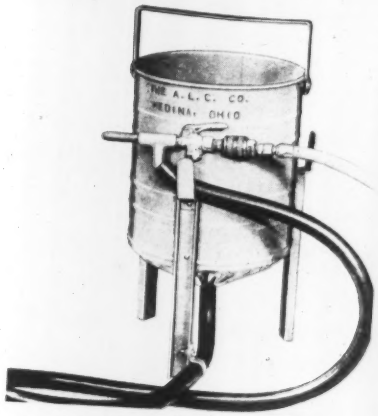
THE WHELAND COMPANY

FOUNDRY DIVISION

MAIN OFFICE AND MANUFACTURING PLANTS

CHATTANOOGA 2, TENNESSEE

NEW PRODUCTS and equipment



psi pressure. Its tank holds 12 quarts of abrasive, such as silica sand, metal shot, nut shells, or aluminum oxides.

Liquid detergents may be used. *Write:* A.L.C. Co., 646 Oak St., Medina, Ohio.

Grease for Rough Jobs

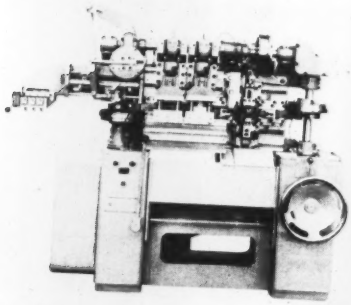
This industrial grease is for bearings subject to high pressures and shock loads, or fretting corrosion.

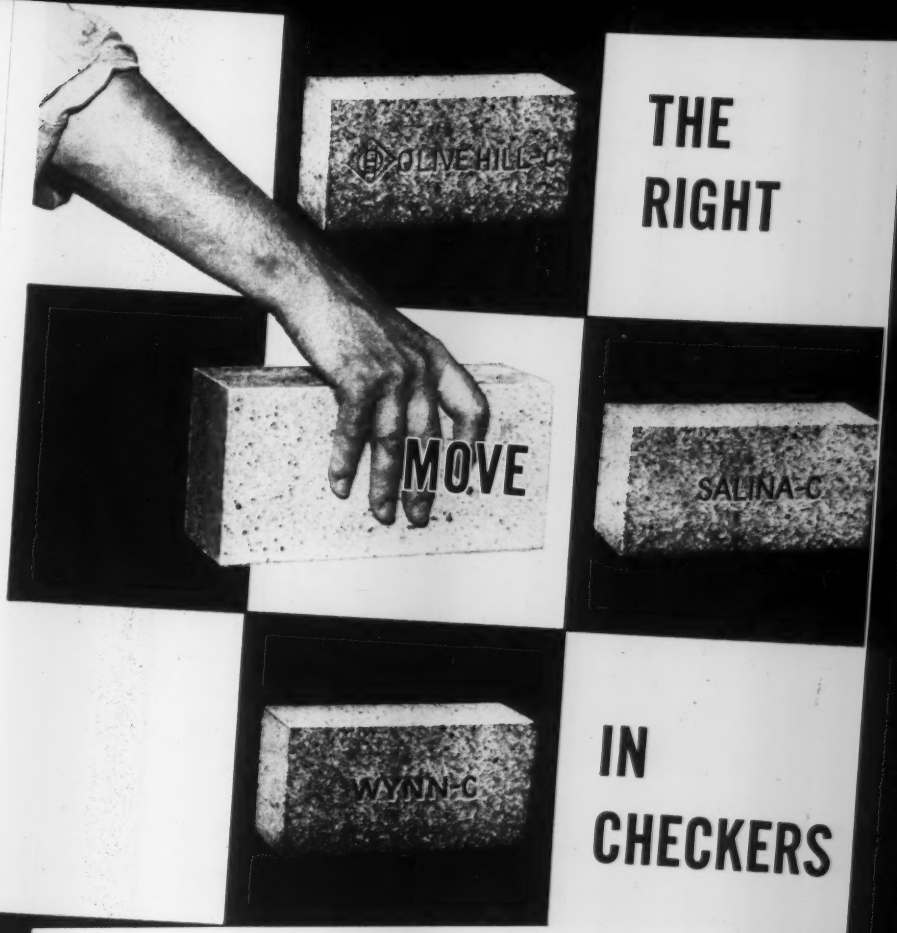
Gulfcrown Grease E.P. meets severe conditions where loads have been increased above normal on steel mill rolls, oscillating shafts, rotary kiln bearings, Banbury mixers, crushers, gears, cams, and vertical swing shaft gear reductions.

It has excellent water resistance and can be pumped without difficulty at temperatures below freezing. *Write:* Gulf Oil Corp., Pittsburgh, Pa. *Phone:* Express 1-2400

Four Slide Is Vertical

The Verti-Slide all-purpose vertical four-slide machine has production advantages over the conventional horizontal type in wire form-





THE RIGHT MOVE IN CHECKERS

General Refractories offers ***superior*** high duty fireclay checker brick; possessing all four properties recognized as the criteria for long life in regenerator chambers — high density, low porosity, high strength and refractoriness.

High density and low porosity are needed to insure volume stability, optimum heat transfer and minimum penetration of flux-bearing gases. High refractoriness, coupled with these other properties, is needed to withstand the temperatures prevalent in most regenerator chambers.

Any one of these properties by itself cannot describe an excellent checker. It is the combination of all these properties in one product that produces a superior checker brick.

GREFCO checker brick possess ***all*** these attributes. Manufactured from select, highly refractory fire clays; by GREFCO's unique double-tempering process; pressed in special dual-action, deairing power presses, fired to high temperature in tunnel kilns; and given a final rigid inspection for accurate size and quality; General Refractories' "C" brands are superior checkers.

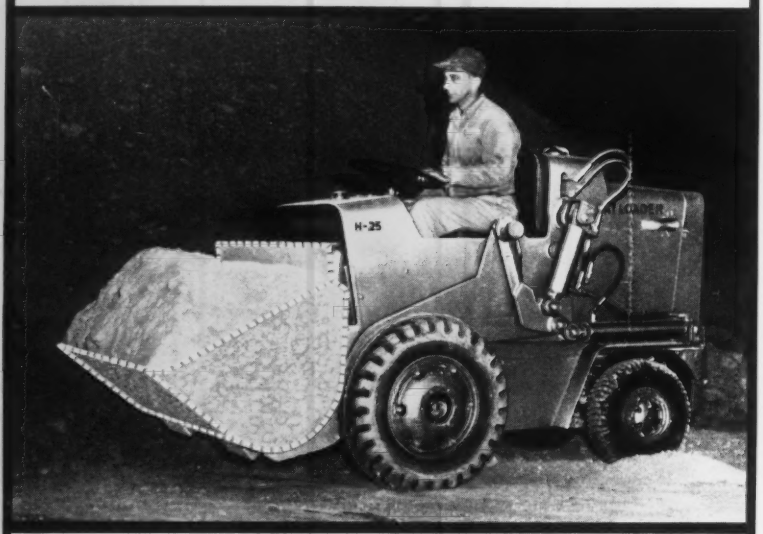
Surely, "THE RIGHT MOVE IN CHECKERS" is to — GREFCO!

WRITE FOR NEW LITERATURE ON CHECKER BRICKS

GREFCO

GENERAL REFRACTORIES COMPANY
Philadelphia 2, Pa.

It's not bucket SIZE...



It's the weight of the load that determines capacity

BUYING A TRACTOR-SHOVEL on a *bucket volume* basis, without knowing the unit's carry capacity in pounds puts the cart before the horse . . . you may get too much bucket (or not enough) to handle *your* material most efficiently.

Buying on the basis of *lifting capacity* is equally misleading since any unit can lift much more than it can carry. It's the pounds that can be moved safely at normal speeds, in relation to the weight of the material to be handled that determines proper bucket size.

MORE POUNDS PER LOAD—the *2500-lb. carry capacity* rating of the new model H-25 "PAYLOADER" is equal to 40% of the total machine weight. It represents *a new high* in capacity-to-weight ratio for tractor-shovels of this class.

MORE LOADS PER SHIFT— not only does the H-25 handle a bigger load for its size and weight, but it has the speed, maneuverability and ease of operation to move more loads per shift. These features make this *extra production* possible: 2-speed, full reversing power shift transmission with matching torque converter, power steer, power transfer differential, closed hydraulic system, triple air cleaners, major pivot points sealed and 40° bucket tip back.

It will pay you to have a Hough Distributor demonstrate how the H-25 "PAYLOADER" can handle more tonnage at lower cost. Ask about Hough Purchase and Lease Plans too.

THE FRANK G. HOUGH CO. 11-A-2
876 Sunnyside Ave., Libertyville, Illinois
Send complete data on the new H-25 "PAYLOADER"
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Title.....
Company.....
Street.....
City.....State.....

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THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

NEW PRODUCTS and equipment

ing: Superior visibility and accessibility to all its parts, and reduced floor space.

Setup, and adjustment of feed stroke, cams, presses, and cutoff can be made while standing in front of the machine. *Write*: Torrington Mfg. Co., Torrington, Conn. *Phone*: Hunter 2-4422

Paint Resists Moisture

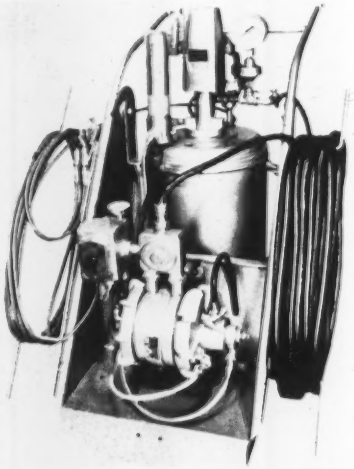
Ifco catalytic protective coating is a combination of vehicles and rust inhibitive pigments with a catalytic agent.

When combined with the metal, the agent is said to produce a coating with high resistance to salt water, moisture, acid, and gas fumes.

It will dry in 5 to 10 minutes and cannot be removed except by sandblasting or other vigorous methods. *Write*: Industrial Finishes Co. Inc., 1119 Land Title Bldg., Broad and Chestnut Streets, Philadelphia 10, Pa. *Phone*: Locust 4-6174

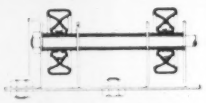
Spray Needs No Air

Here is a portable, airless paint-spray system based on hydraulic atomization. The Chiefton Hydra-Airless offers almost total elimination of overspray, resulting in savings up to 40 per cent. A spray booth is not needed.

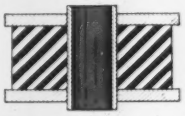


The system forces viscosity controlled paints through an orifice at high pressure to obtain the desired atomization. *Write*: Spee-Flo Co., 6614 Harrisburg Blvd., Houston 11, Tex. *Phone*: Capitol 5-0461

F-M Spacers Save Money in Hundreds of Applications. Spacers shown in Red



Cross member dividers on conveyor sections.



Motor mount bolt sleeve spacer.

Control rod spacers.

Before and after: Two spacers replace undercut machined wheel hub

Leaf spring bolt spacer.

Spacer-stabilizer linkage.

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Time, Money, Materials with Rolled, Split SPACER TUBES

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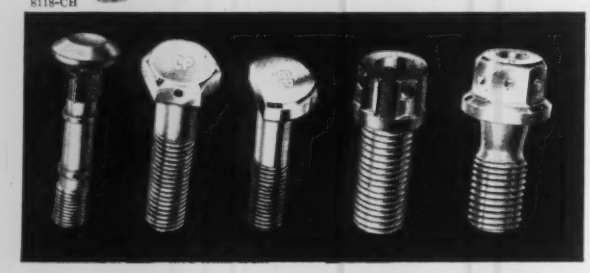


Send today for catalog and "Aircraft Bolt Stock List"

NEW literature

Write directly to the company for a copy

Rotary Blowers and Pumps

Details on continuous service, rotary positive pressure blowers, and gas and vacuum pumps are given in a bulletin (S65C). Sutorbilt Corp., 2966 E. Victoria St., Compton, Calif.

Freight Carts

Circular 29-E describes the FloorMaster freight carts, available for manual, in-floor dragline, or overhead dragline operation. Dept. R8-20, Lewis-Shepard Products Inc., 125 Walnut St., Watertown 72, Mass.

Barrel Finishing

Design features of Model 30 Series barrel finishing machines are discussed in Bulletin No. 200. Techline Div., Wheelabrator Corp., 1157 Avenue V, Vicksburg, Mich.

Steel Tubing

Folder TDC-186 will aid in determining the proper specifications to apply to various types of carbon, alloy, and stainless steel tubing, pipe, seamless welding fittings, and flanges. Tubular Products Div., Babcock & Wilcox Co., Beaver Falls, Pa.

Hydraulic Hot Presses

A brochure cites features of hydraulic hot presses which this company offers to plan and engineer for improved production. Berthelsen Engineering Works Inc., Box 1423, Lockport Road, Joliet, Ill.

Pressure Measurements

Bulletin Series PSG-1 covers Glennite strain gage pressure transducers. Performance, application, mechanical and electrical specifications, and compatibility in installations are detailed. Gulton Instrumentation Div., Gulton Industries Inc., 212 Durham Ave., Metuchen, N. J.

Mechanical Steel Tubing

A handbook on cold drawn, buttweld mechanical steel tubing describes its manufacture, uses, and economies it has effected in industry. Pertinent metallurgical, mechanical, and engineering data are included. Pittsburgh Tube Co., 212 Wood St., Pittsburgh 22, Pa.

Titanium Fittings

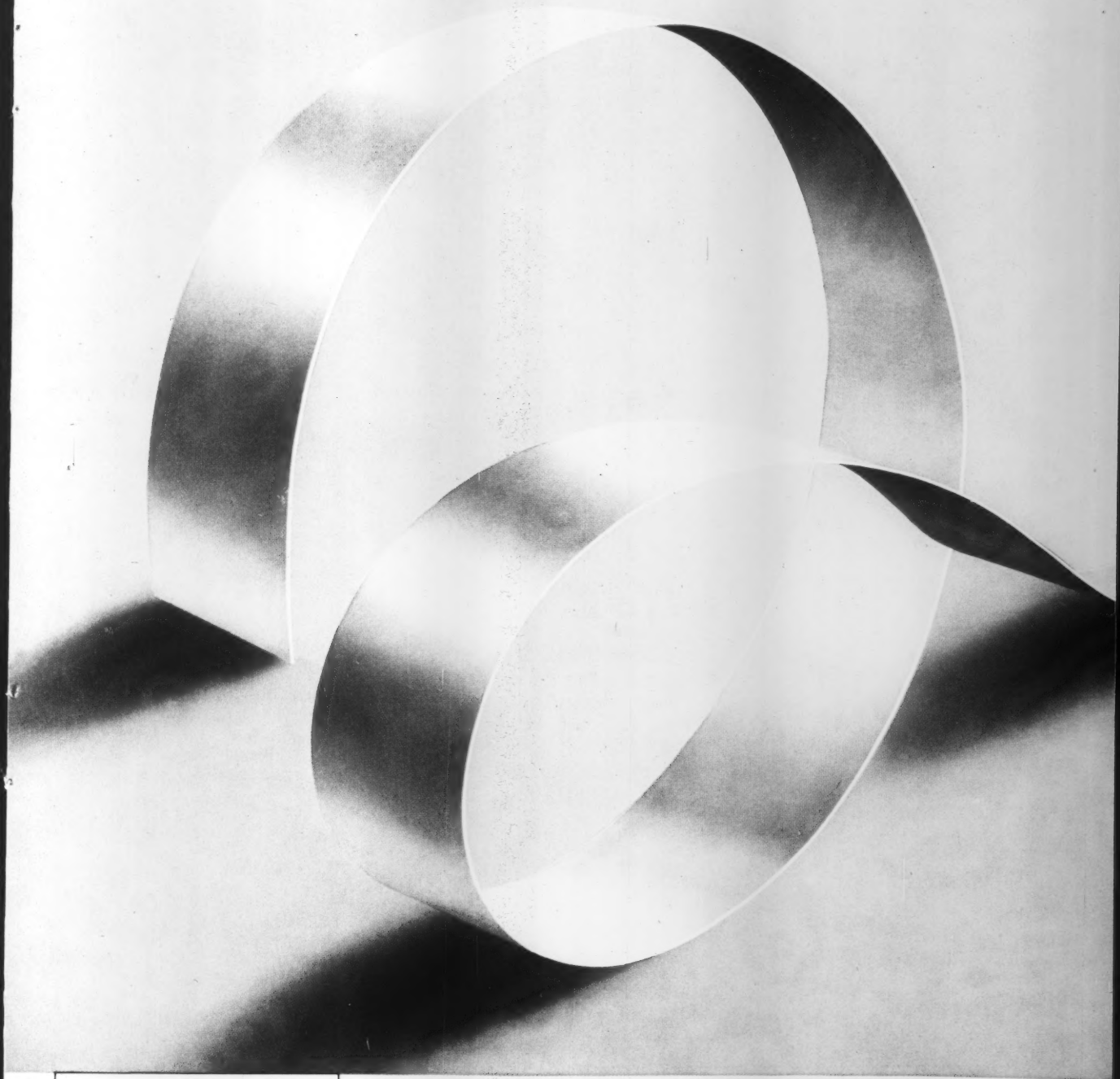
Titanium fittings used for high pressure and high temperature applications are described in a brochure. Harvey Aluminum, 19200 S. Western Ave., Torrance, Calif.

Vacuum Melting

Data and specification sheets are available on vacuum melting techniques and high temperature, vacuum melted alloys. Covered also is Rene 41, a precipitation hardening, nickel-base alloy with high

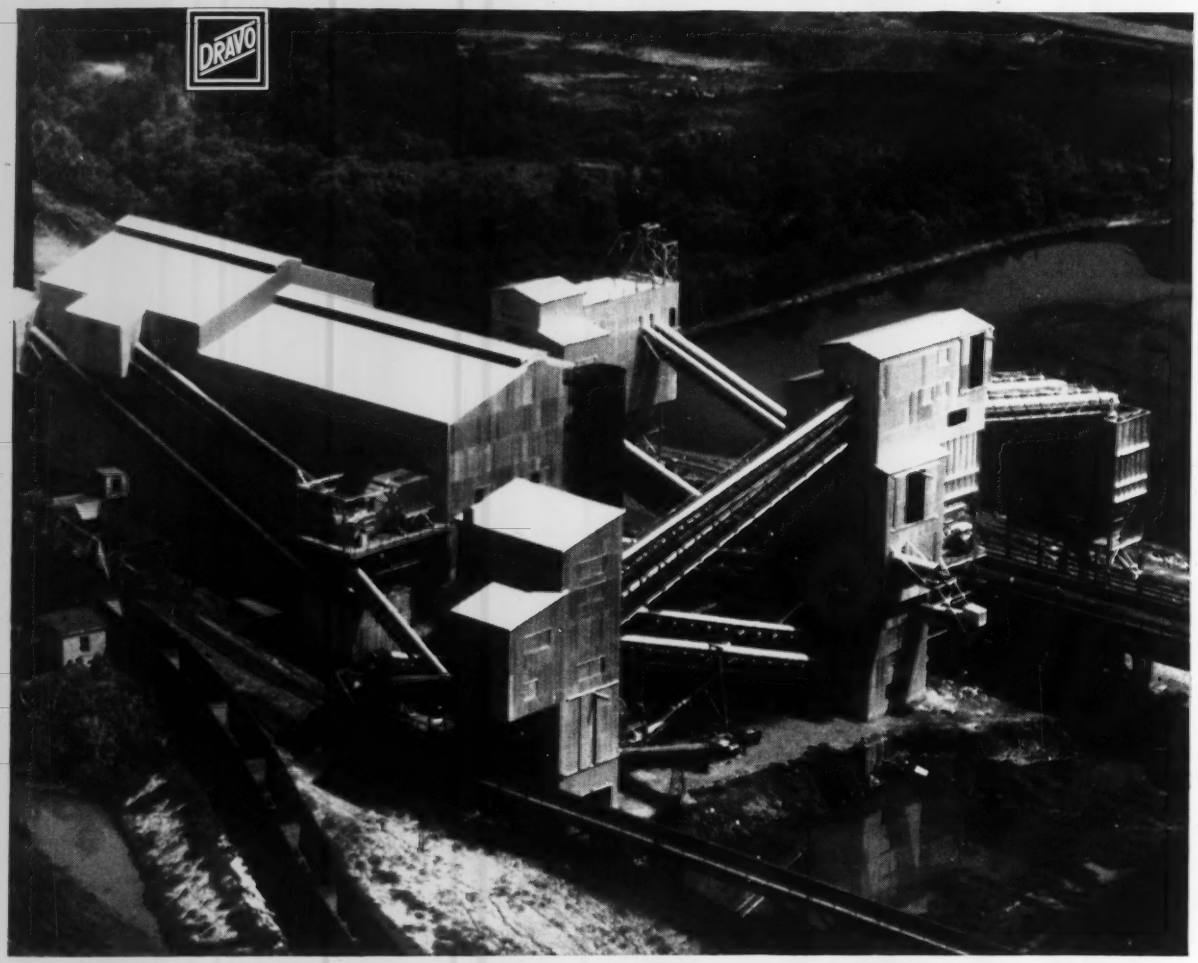
stainless strip—that reflects your specifications

Call Crucible to fulfill strict specifications for lustrous finish, uniform quality and gauge in stainless strip. For Crucible produces finishes of incomparable lustre by precision-rolling each coil on modern mills. Exact quality and gauge are consistently ensured because Crucible methodically checks each heat, measures gauges continuously with electronic controls. So why settle for less than strip that reflects your high standards? Call Crucible—a leading producer of stainless in gauges to .010" and in all widths. Or write: *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*



CRUCIBLE STEEL COMPANY OF AMERICA

Canadian Distributor—Railway and Power Engineering Corp., Ltd.



New Dravo-Lurgi Sinter Plant for Armco Steel

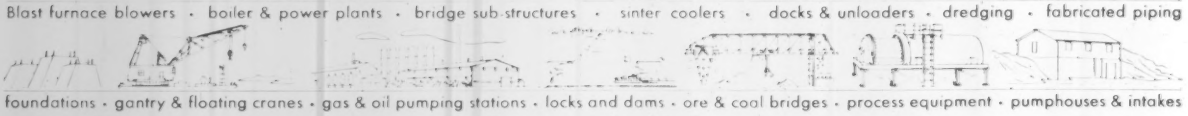
This Armco Steel Corporation installation at Ashland, Ky., is the first of several Dravo-Lurgi sinter plants to be completed. The new facility will make it possible to reclaim accumulated sludge and flue dust, increase the efficiency of blast furnace operation.

Built into extremely limited space, the plant receives and stores a day's supply of raw materials in eight hours. It then sinters twenty-four hundred tons per day for blast furnace charging.

The Armco facility is one of four new Dravo installations, two of which have capacity greater than any plant in the United States. For information on sintering equipment or the other products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PA.

DRAVO
CORPORATION

Blast furnace blowers · boiler & power plants · bridge sub-structures · sinter coolers · docks & unloaders · dredging · fabricated piping



foundations · gantry & floating cranes · gas & oil pumping stations · locks and dams · ore & coal bridges · process equipment · pumphouses & intakes

river sand and gravel · sintering plants · slopes, shafts, tunnels · space heaters · steel grating · towboats, barges, river transportation

strength in the 600 to 1800° F range. Metallurgical Products Dept., General Electric Co., 11177 E. Eight Mile Rd., Detroit 32, Mich.

Leasing Equipment

An analysis of the advantages of leasing equipment is set forth in a brochure. Several case histories are included. United States Leasing Corp., 130 Montgomery St., San Francisco 4, Calif.

Power Presses

Types of Warco power presses and fundamentals of press working of metals are described in a bulletin (No. 52151). Federal Machine & Welder Co., Warren, Ohio.

Metal Degreasing

Utilization of emulsion cleaners for the degreasing and effective removal of dirt and soil from metal surfaces is discussed in Bulletin No. 132. L. Sonneborn Sons Inc., 300 Fourth Ave., New York, N. Y.

Aluminum Rigid Conduit

A booklet outlines the mechanical and electrical advantages of aluminum rigid conduit. Aluminum Co. of America, 749 Alcoa Bldg., Pittsburgh 19, Pa.

Heaters

Pipe, thermostatically controlled immersion, 1-in. diameter water immersion heaters, and new ratings and configuration of tubular heaters are covered in Catalog GEC-10051. Various heating processes are described in a power requirements section. General Electric Co., Schenectady 5, N. Y.

Air Moving Equipment

A reference guide for those responsible for the operation and installation of blowers, fans, exhausters, and other air moving equipment has been issued in booklet form. Wm. W. Meyer & Sons Inc., 8311 Niles Center Rd., Skokie, Ill.

Explosive Valves

A catalog describes standard and special explosive valves, latch pins, and actuators for industrial and military use. Conax Corp., 2300 Walden Ave., Buffalo 25, N. Y.

Battery Maintenance

Bulletins 5996 and 6207 provide instructions for proper daily and weekly battery maintenance for the users of electric industrial fork trucks. Exide Industrial Div., Electric Storage Battery Co., Philadelphia, Pa.

Compressed Gases

Data and prices on 80 compressed gases are included in a catalog. Custom gas mixtures and new radioactive types are covered. Matheson Co. Inc., P.O. Box 85, East Rutherford, N. J.

Drafting

An article, More Engineering for Less Cost, deals with drafting programs. Filmsort Co., Pearl River, N. Y.

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a lustrous new
TINNED WIRE

Here's smoothness and luster you rarely get in tinned wire. Continental's special technique makes possible an enduring, uniformly bright finish . . . a wire so bright that it can replace plated wire on many products. It retains its brightness for long periods of time in normal use. Continental tinned wire meets your needs for quality and workability and is available in almost any temper and analysis in medium low carbon and low carbon steels.

FINE—16 gauge through 30 gauge, in 8" diameter coils
COARSE—20 gauge through 5/16", in 16" and 22" diameter coils.

For smooth beauty and high degree of perfection in wire, you will want to investigate Continental Tinned Wire. Write or Telephone—today; or return coupon below.

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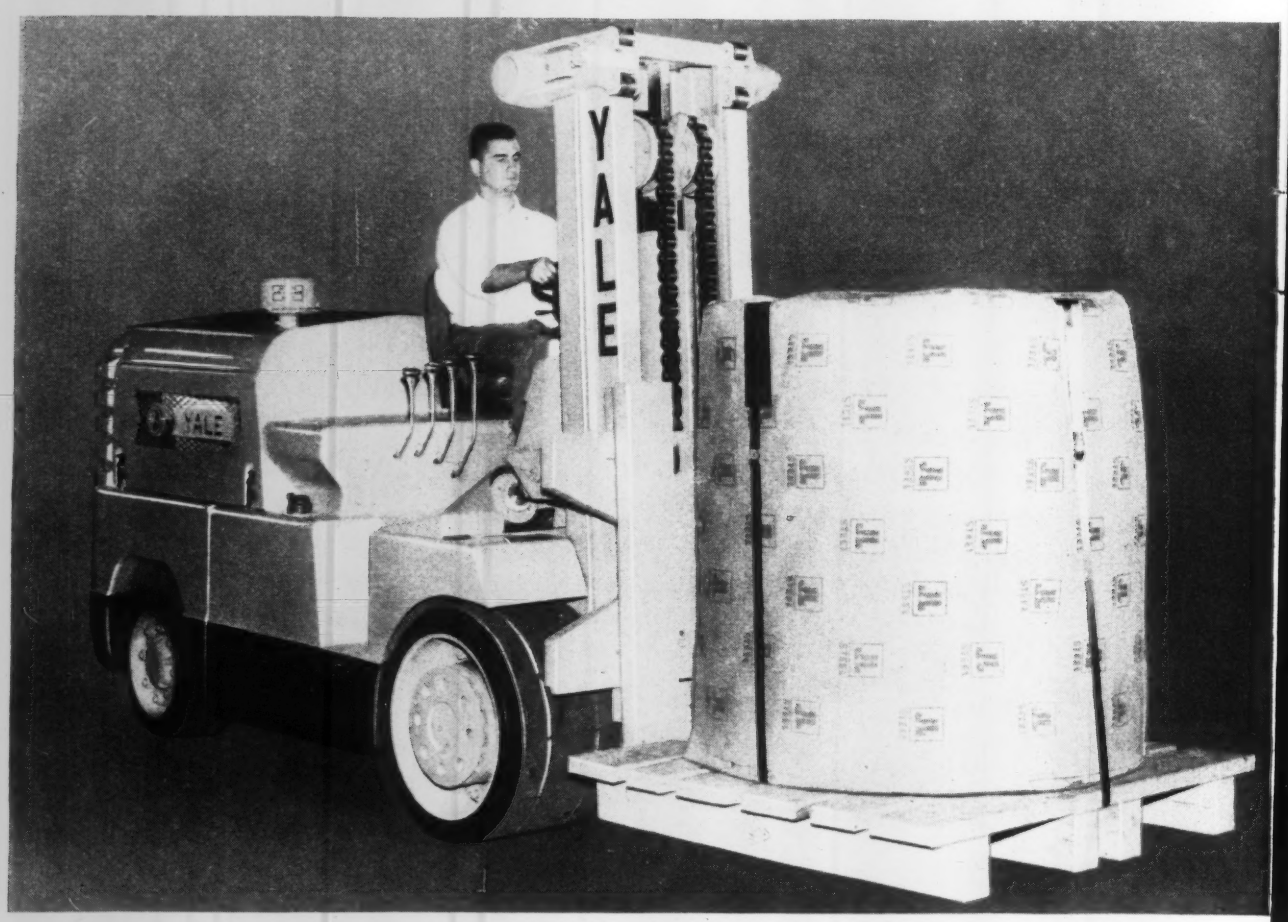
CORPORATION • KOKOMO, INDIANA

PRODUCERS OF: Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame Sealed, Coppered, Tinned, Annealed, Liquor-Finished, Bright and special shaped wire. Also Welded Wire Reinforcing and Galvanized Fabric, Nails, Continental Chain Link Fence, and other products.

Yale introduces 2 short trucks



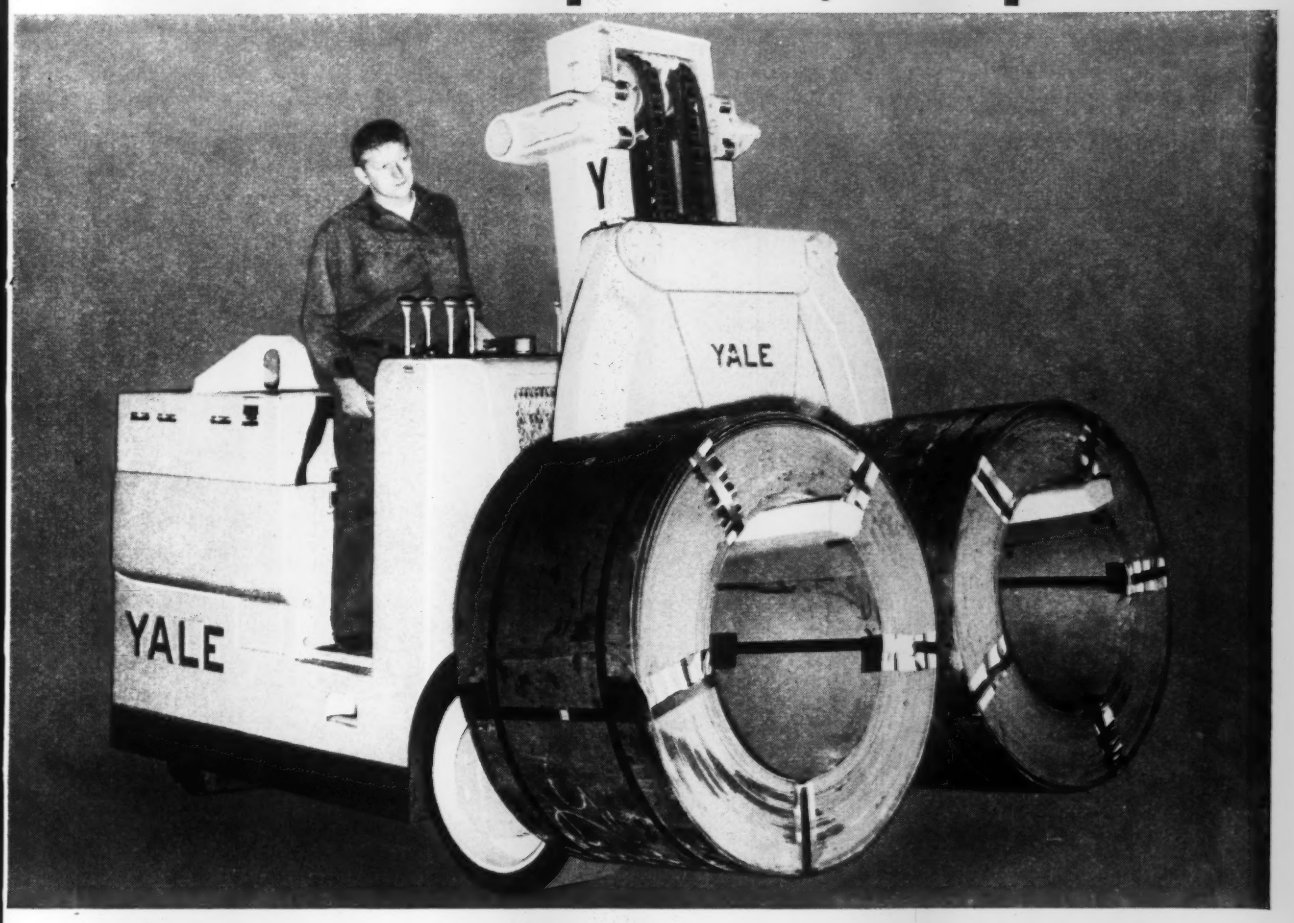
Gasoline

Yale G5 Series—Only Series of its Kind to Feature Rugged Design and Fast Cycle Operations. For heavy industry. • Instant power for fast acceleration from fully automatic torque converter transmission with 2 speed ranges. • Lifting speeds up to 60 ft. per minute. • Turning radius, only 112"—permits easy movement in and out of box cars. • Operator positioned for excellent visibility. • Powerful V-8 industrial engine. • High underclearance. • For use with forks, single ram, hydraulic split ram or specialized attachments. • Available for use with LP-gas. • Capacities: 15,000 to 20,000 lbs.

Both guarantee

Both economical new Yale Trucks—gas and electric—feature famous Yale Integrated Design and premium engineering advances as standard components. You get extra rugged channel assembly—Yale Planetary Drive Axle assembly—hydraulic wheel brakes—tough steel frame construction. For full information about these and other Yale gas, LP-gas, electric, hand trucks, industrial tractor shovels, hand and electric hoists—write The Yale & Towne Mfg. Co., Materials Handling Division, Philadelphia 15, Pa., Dept. **A-811.**

that handle up to 20,000 pounds



Electric **Yale K410 Series—Combines Heavy-Industry Power With a Turning Radius of Only 92⅝".** Designed for easy serviceability. • Accommodates 60 to 72 volt batteries to meet any power requirement. • Telescopic, hydraulic lift gives maximum lift per overall height. Easy to maneuver in and out of box cars. • Operator has choice of two stations for excellent visibility at all times. • Hydraulic tilt to safety nest-loads speeds handling operations. • For use with forks, single ram, hydraulic split ram or specialized attachments. • Available with engine-generator power unit. • Capacities: 12,000 to 20,000 lbs.

faster cycle operations

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GASOLINE, ELECTRIC, DIESEL & LP-GAS INDUSTRIAL LIFT TRUCKS • WORKSAVERS
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U. S. Army Photograph

Prime and subcontractors find in Acme-Newport aircraft quality steels the consistent uniformity our defenses must have for unfailing performance in guided missiles, Jatos and planes. This 73-year-old basic steel producer rolls aircraft quality plate, sheet and strip in alloy and carbon grades. All are clean, sound, chemically accurate; always respond properly to heat treatment. Whether for defense or industry, meeting rigid specifications within tight schedules is a familiar job for Acme-Newport's conscientious personnel, efficient modern facilities, and fast Red Circle Service. Won't you call us on your next order?

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NEWPORT, KENTUCKY

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RED CIRCLE SERVICE

EXPEDITES YOUR RUSH ORDERS

Market Outlook

Steelmen Predict Strong Finish

FOURTH QUARTER steel output will be the year's best, by far. In spite of auto strikes, deferred orders, and tangled production schedules, operations will average about 74 per cent of capacity (vs. 54.1 per cent in the first two quarters and 60.1 in the third). Production will be about 26 million ingot tons, evenly distributed over the three months. The year's total: 85 million.

Last week's output reflected delays in automotive buying, poor demand for oil country goods, and seasonal declines in construction items. Operations slipped half a point to 74.5 per cent of capacity. Production was about 2,011,000 tons of steel for ingots and castings, 15,000 tons more than in the corresponding week of 1957.

AUTOMOTIVE OUTLOOK— Strikes played hob with automotive production last month. Instead of assembling the 488,000 cars they had scheduled, automakers built 259,000. They've upped November's quota from 500,000 to 531,000 and could boost December's output, too, if sales reports are sufficiently encouraging. The decision will hinge on figures for the first half of November. If the carbuilders don't raise their sights, they'll turn out 510,000 autos in December and 1.3 million in the fourth quarter, or 10 per cent less than the 1.45 million originally scheduled.

FORD STARTS WELL— If sales reports for other makes follow the trend being set by Buick, Rambler, and Ford, the auto industry will have good reason to hike its production goals. Ford dealers sold 100,000 cars in the first two weeks. Results weren't that good when the 1957 models were introduced, and they were destined to outsell Chevrolet. Overtime production would reduce profits, but automakers think nothing's so important as getting more new cars on the road.

IMPACT ON STEEL— If the auto companies decide to make up lost production in the final weeks of the year, their fourth quarter steel requirements will be about 3.2 million tons. But if assemblies fall 10 per cent short of the original target, steelmakers won't lose 10 per cent of their automotive business. Reason: Suppliers of auto parts will be building inventories.

RECOVERY IN 1959— The Federal Reserve Board's index of industrial production will average about 147 next year, and steel output will be between 102 million and 110 million ingot tons, predicts F. Russell Widmer, Republic Steel Corp.'s director of commercial research. Recalling that an index of 139 meant 117 million tons in 1955, he explains: 1. Next year's capacity (146 million tons) will be so great that consumers won't feel compelled to build big inventories even if they fear a strike. 2. Consumer durables aren't slated for a boom of the proportions that brought recovery from the 1954 recession.

IMPORTS EXCEED EXPORTS— Latest statistics on steel imports confirm the fears of those who warn that American labor may be pricing itself out of the market. During July, the U. S. imported 171,000 tons of steel mill products and exported 169,000. Imports nearly doubled those of July, 1957, while exports dropped to 30 per cent of the earlier figures. Fewer structurals are coming in this year, but the lost tonnage is more than offset by sharp gains for nails, fencing, wire rods, and reinforcing bars.

HEDGING AIDS TIN PLATE— If it hadn't been for buyers' anxiety to beat the higher prices that went into effect on Nov. 1, shipments of tin plate would probably have fallen substantially below last year's. (The export market is off about 200,000 tons.) Now it's believed that shipments will be within 2 per cent of 1957's 5.9 million tons.

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This enables metal-users to simplify operations and save money. By standardizing with versatile Amballoy—personalized steels from Byers—you can whittle your necessary chemistries to one or two. Then, through heat-treating, you can obtain the wide variety of exacting physical characteristics you require.

Such sensible programming pays off quickly. There's an instant streamlining effect on your inventory. There's less capital tied up. Less unproductive space to account for.

So, investigate Amballoy as the workhorse material for your critical applications. Call up your local Steel Service Center stocking Amballoy steels. The Byers metallurgist will furnish his name. Or, write or call: Manager of Steel Sales, ATlantic 1-8110, A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

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He stocks an infinite variety of all the sizes and shapes and grades and finishes you metal-users have to have in a hurry.

Your Steel Service Center performs this function as a service to you. He can do it at a fraction of the cost you would have to pay to do the job yourself. He does his own slitting, flame cutting, sawing, shearing. He minimizes your fabricating and heat-treating costs. Delivery? 24 hours or less.

He's the man with the big inventory. It's his business to assume much of the risk. Furnish much of the space —the capital—the equipment. Get Amballoy steels from him.

And if you need help in standardizing on the *right* alloys for your material requirements, call *us:* ATlantic 1-8110. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

A. M. BYERS COMPANY

Alcoa.

Nonferrous Casting Shipments

(Tons)

	Brass-Bronze	Aluminum	Magnesium
1958*	360,000	306,000	13,000
1957	437,695	375,828	15,161
1956	483,153	397,290	18,084
1955	504,449	413,581	13,927
1954	417,965	312,486	12,889
1953	495,248	329,011	17,259
1952	504,955	259,489	17,429
1951	588,771	275,216	16,567
1950	528,486	271,541	7,612

Source: Bureau of the Census.
*Estimated by STEEL.

Nonferrous Foundry Sales Advance

Aluminum castings sales will sparkle next year. Magnesium demand is climbing. Brass and bronze founders map research, education, and promotion drive

NONFERROUS FOUNDRIES look to 1959 for better business volume as they wind up a disappointing year. There's basis for tempered optimism. Orders show some increase over the first half of this year.

The Non-Ferrous Founders Society Inc., Chicago, says that while most nonferrous foundries aren't enjoying as much of an upswing as the rest of the economy, here and there a shop reports its business started picking up in May.

• **How Sales Dropped**—Nonferrous castings shipments dropped this year as the result of sharp curtailment of capital goods and consumer products output. At the end of August, shipments of brass and bronze castings were 30 per cent below those of August, 1957, and unfilled orders were off 56 per cent. Shipments of aluminum castings declined 29 per cent as backlogs fell 35 per cent. In magnesium, shipments were 31 per cent lower; backlogs were off 26 per cent.

Brass and bronze castings sales suffer from reduced activities in the building construction, automotive, railroad, marine, electrical, and machinery industries. That cuts demand for bearings, bushings, plumbing fixtures, valves and fittings, pumps, and propellers.

• **Brass, Bronze Lose Customers** — Until recently, price was a strong factor in loss of markets to competing metals. From 1950 to 1956, aluminum output rose more than 100 per cent. In the same period, ingot brass consumption fell about 10 per cent.

Ground was lost in such markets as decorative and building hardware and automotive trim. There aluminum and zinc castings and plastics made heavy inroads.

Faced with the problem that the brass and bronze castings industry is not keeping pace with the economy's growth, the Brass & Bronze Ingot Institute, Chicago, is conducting a program of research, education, and promotion to create a climate more suited to expansion.

The institute's expanded research program will provide data on mechanical and physical properties of brass and bronze ingots for design engineers, architects, purchasing agents, and others concerned with specification and product development. The educational program will show foundries how promotion will build sales. It will emphasize importance of good communications between design engineers and foundrymen.

• **Aluminum Looks to 1959**—Shipments of this light metal have been trimmed by slow-paced auto production. Kaiser Aluminum & Chem-

ical Sales Inc., Chicago, estimates that total aluminum castings shipments this year will be about 306,500 tons, or 18.5 per cent below those in 1957. Estimates for 1959 shipments are 407,500 tons.

Last year, reports Kaiser, the transportation industry consumed about 48 per cent of all aluminum castings. The next largest market, industrial and commercial machinery and tools, accounted for 15 per cent of total consumption.

In 1956 and 1957, captive castings shipments made up about 25 per cent of the total. In 1958, it's estimated that captive shipments will account for 28 per cent of the total.

Aluminum Co. of America, Pittsburgh, comments that the most significant technological advances in the aluminum foundry business have been made in the development of new alloys: In addition to improved strength and ductility, they have excellent castability.

Most promising in the sales outlook for nonferrous castings are aluminum castings, chiefly because of their growth prospects in automobiles. Use is increasing each year, and the aluminum engine should provide a big push by 1961.

• **Magnesium Recovers**—Shipments of magnesium castings fell because of cutbacks in defense ordering. Dow Chemical Co., Midland, Mich., points out that the aircraft and missile industries are the most important users. Both captive and job shops enjoy a higher level of business now than in first half of 1958.

• **Price Levels** — Rising foundry wages and higher tags on metal have resulted in additions of as much as 10 per cent to prices of nonferrous castings since the beginning of this year although strong competition minimizes such increases. It's a common complaint among founders that prices are too low to allow an adequate profit margin.

Iron Ore . . .

Iron Ore Prices, Page 183

At the September rate of consumption, 8,214,164 gross tons (U. S. and Canada), enough iron ore was at docks and furnaces at the end of that month to support blast furnace operations for about eight and a half months.

Total stocks (U. S. and Canada, domestic and imported) amounted to 71,296,684 gross tons, up 6,123,820 from the total held on the last day of September, 1957.

Consumption will rise noticeably over the last three months of the year as additional blast furnace capacity has been activated since September, and more idle stacks are expected to be placed in operation in November and December. Blast furnace activity in September, August and a year ago follows:

Districts	Active Stacks Sept. 30, 1958	Active Stacks Aug. 31, 1958	Year Ago
Eastern	44	41	49
Pittsburgh-Youngstown	51	50	76
Cleveland-Detroit	16	14	25
Chicago	34	31	40
Southern	15	13	23
Western	11	11	12
Total U. S.	171	160	225
Canada	7	6	14
Total U. S. & Canada	178	166	239

Total receipts of iron ore in the U. S. and Canada in the first nine months of this year were 68,992,261 gross tons, vs. 108,730,561 in the like period last year.

The breakdown: U. S. Lake Su-

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perior ores, 37,519,897 tons, vs. 66,328,375 in the like 1957 period; other U. S. ores, 10,518,314, vs. 15,531,489; Lake Superior Canadian ores, 1,633,930, vs. 2,809,034; other Canadian ores, 5,302,460, vs. 7,536,582; foreign ores (except Canada), 14,017,660, vs. 16,525,081 tons.

October shipments of Lake Superior iron ore totaled 8,480,635 gross tons, off 2,525,009 tons from the 11,005,644 moved in the same month last year, reports the American Iron Ore Association. Lake ore shipments to Nov. 1 came to 48,264,152 gross tons, vs. 80,529,544 in the like 1957 period.

Jones & Laughlin Steel Corp. has started rehabilitation of its Cleveland Works dock. About 400 ft of the north section will be improved at a cost of $350,000 to provide modern facilities for unloading limestone. About 20,000 ft of 10-in. pipe will be used for piling. Another 716-ft section of the dock was modernized in 1950 for the unloading of iron ore.

Metallurgical Coke . . .

Production of coke in September totaled 4,504,381 net tons (4,450,171 tons oven, 54,210 tons beehive), reports the U. S. Bureau of Mines. In the preceding month, output was 4,314,368 ton, (4,275,708 oven, 38,940 beehive), and in September, 1957, it was 6,310,300 tons (6,167,600 oven, 142,700 beehive.)

Pig Iron . . .

Pig Iron Prices, Page 182

Though far from brisk, merchant pig iron demand is more active than it was. Some sellers say October business was no better than it was in the preceding month; they don't anticipate much gain in the immediate future.

Iron foundries are averaging less than four days a week and are buying only for nearby needs. Their inventories are low, but with shipments easy, they are not replenishing their stocks. Automotive foundries have increased operations, but jobbing foundries continue to limp along on slim order backlogs.

Interlake Iron Corp. relighted its "B" stack at South Chicago Oct. 31. A strictly merchant unit, this furnace was idled Mar. 27 when installation of new boilers was started.

The Birdsboro, Pa., stack of Colorado Fuel & Iron Corp., and the second furnace of Alan Wood Steel Co. at Swedeland, Pa., have been blown in.

Steel Shipments Increase

Steel shipments hit 5,386,292 net tons in September, more than 11 per cent above the 4,835,023 tons shipped in the preceding month, reports the American Iron & Steel Institute.

Notable among September gains were: 1. An increase in tonnage to automotive consumers—exceeding 1 million tons for the first time this year. 2. A rise in sheets and strip shipments to more than 2 million tons for the first time in any month this year.

Principal products shipped were: Cold-rolled sheets (964,851 net tons); hot-rolled sheets (617,295); electrolytic tin plate (525,739); hot-rolled bars, including light shapes (517,551); plates (393,633). Sheets and tin plate were at their high-

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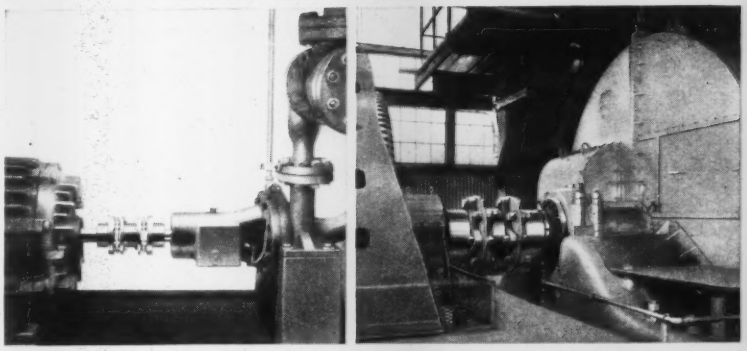

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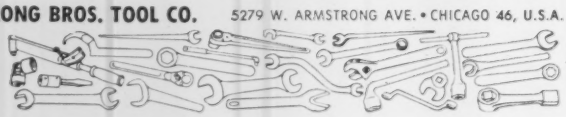

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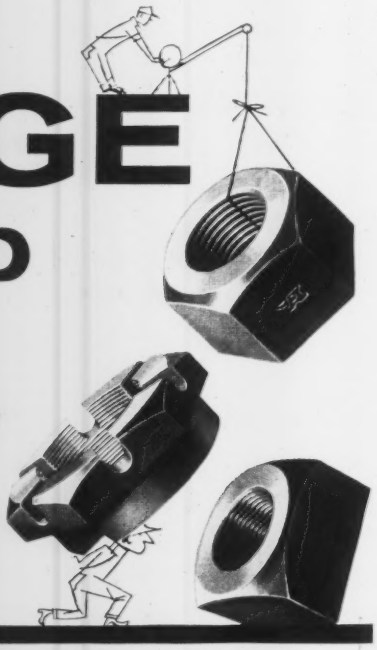

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est monthly level this year.

Major markets in the month were: Automotive (1,055,759 tons); warehouses and distributors (937,714); construction, including maintenance (725,935); containers (679,851); machinery, industrial equipment, and tools (274,891).

In the first nine months steel shipments were 43,002,481 net tons, vs. 62,589,328 in the like 1957 period.

Principal markets in the first nine months were: Warehouses, 7,775,549 tons, vs. 11,708,222 in the like 1957 period; construction (including maintenance) 6,597,153 tons, vs. 9,637,526; automotive 6,568,179 tons, vs. 10,392,996; containers 5,166,203 tons, vs. 5,183,132; contractors' products 2,522,174, vs 2,687,941.

Moderate Upturn Expected

Inventory reduction has about run its course, says A. B. Homer, president, Bethlehem Steel Co., Bethlehem, Pa. He anticipates a moderate business upturn, but thinks demand for heavy steel products will continue slow for a while.

The Bethlehem executive also thinks steel production will total about 85 million tons this year, may reach 110 million in 1959.

The key in the recovery, Mr. Homer says, is the auto industry. If the new models win public favor, and auto labor conditions improve, important gains in automotive and related steel tonnage will follow.

The improvement in leadtime is encouraging. Consumers are doing less hand-to-mouth ordering, indicating more forward ordering.

Mr. Homer foresaw some slight gain in heavy products—plates and shapes—which have been lagging behind sheets, strip, and tin mill products. He thinks structural fabricators will have to start rebuilding their steel stocks. Already, the railroads are a little more active, and while shipwork has dipped a little over recent months, it should continue to provide a strong demand.

Distributors . . .

Prices, Page 182

Steel service centers expect their business to hit moderately high levels this month. Scattered strikes

following the settlement of labor difficulties in the automotive industry limited sales last month. Another restrictive factor was the slowdown in construction caused by adverse weather in many sections. Even so, most distributors chalked up a fairly good month.

Pricewise, the market is stabilizing at the higher levels dictated by the upward revision in mill quotations.

Steel Bars . . .

Bar Prices, Page 177

Accelerating demand for steel bars is steadily tightening supplies, but deliveries still range two to four weeks. Buying has expanded to the point where one midwestern mill would like to lengthen rolling cycles, but it dares not to because of competition. Few barmakers are engaged at capacity; the seller giving fastest delivery gets the order.

The bulk of buying is in the smaller and more popular sizes. Warehouses are not specifying as heavily as had been expected. But fastener makers and miscellaneous manufacturers have stepped up requirements.

Wire . . .

Wire Prices, Pages 179 & 180

Wire mills have been booking volume tonnages in recent weeks, and expectations are November volume will be at the October level. Some slackening is expected in December, notably in products sensitive to seasonal changes.

Automotive consumption is heavier and should rise as automakers step up their production schedules. Several eastern wiremakers producing high carbon specialties have increased their primary steel production to around 80 per cent of capacity.

Imports are holding down rod and finished wire volume. Substantial lots of low and medium carbon foreign rods have been placed with consumers in this country at $14 to $18 a ton under the domestic market.

Normally, wire deliveries can be made in three to four weeks. Sales of road, building, and pipe mesh support full production schedules, but building fabric is expected to drop shortly for seasonal reasons. Nail business is better than it was

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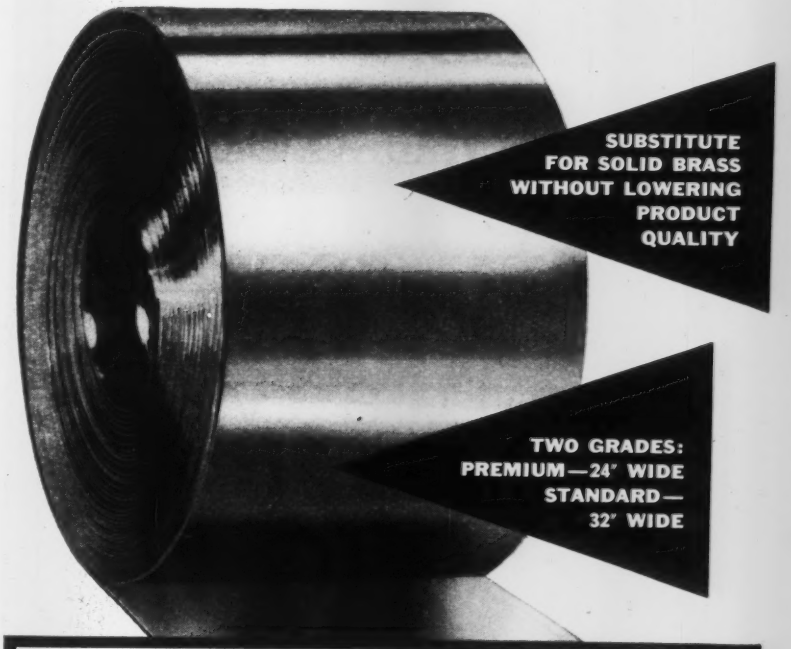

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earlier in the year—and about 35 per cent ahead of the pace in the last half of 1957.

For the year, it looks like merchant product volume will about equal last year's. Manufacturers wire sales may slightly exceed last year's volume. Sixty per cent of the barbed wire sold in this country is imported, and larger tonnages of foreign manufacturers wire are beginning to show up.

Tool Steel . . .

Tool Steel Prices, Page 181

Shipments of high speed and tool steel (excluding hollow drill steel) in September, at 5990 net tons, were the highest for any month this year except January, when 6549 tons were moved, reports the American Iron & Steel Institute. In August, shipments were 5565 tons; in September, last year, 7915 tons.

Total movement in the first nine months this year was 49,684 net tons, a drop of about 36 per cent from the 77,511 tons moved in the like period of last year. Monthly shipments compared with a year ago follow:

High Speed and Tool Steel Shipments
(Net Tons)

Months	1958	1957
September	5,990	7,915
August	5,565	7,479
July	3,891	6,034
June	5,048	7,989
May	5,560	10,244
April	5,679	9,079
March	5,773	10,132
February	5,629	9,182
January	6,549	9,457
1st 9 Mo.	49,684	77,511

Plates . . .

Plate Prices, Page 177

Plates appear to be the slowest of all the major steel products. Demand has probably slowed down over the last couple weeks. Tankwork is less pressing than it was, and, in general, there is little forward buying.

Railroad carwork is coming out at a little faster pace, and shipwork seems somewhat livelier. Recently, Bethlehem Steel's yard at Sparrows Point, Md., booked four 11,000-ton freighters for Lykes Bros. Steamship Co. They'll cost $36,388,000 and are part of a $4-billion ship replacement program of the Federal Maritime Board. Sun Shipbuilding & Dry Dock Co. is low bidder on the construction of three 10,600-ton freighters for the Moore-McCormack Lines.

Export Tin Plate Raised

Higher export price bases and revised lists of extras and deductions for tin mill products have been established by U. S. Steel Export Co., New York, subsidiary of U. S. Steel Corp. The changes, effective Nov. 1, were concurrent with revisions in domestic price bases and extras effected by U. S. Steel's general operating divisions.

TIN MILL PRODUCTS
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	New Price	Old Price
USS common coke tin plate (1.25# coating) superdraw	$10.99	$10.74
USS Ferrostan 25 superdraw (0.25# coating)—electrolytic	9.64	9.39
USS Special coated mfg. terne plate—superdraw	10.69	10.34
USS black plate—superdraw	8.74	8.49

Sheets, Strip . . .

Sheet & Strip Prices, Pages 178 & 179

Deferred deliveries on automotive account (caused by local strikes) has slowed down sheet production to some extent as producers seek to maintain some semblance of order in rolling schedules.

The present situation, however, is temporary. A sharp spurt in auto specifying is anticipated over coming weeks (now that most of the strikes have been settled). Demand is expected to keep steelmaking operations at an average of about 75 per cent this quarter.

Cold-rolled sheet business will be off in November, but it should pick up in December. There also may be a slight dip in hot-rolled sheets. Miscellaneous manufacturers, including appliance makers, are specifying more freely, and deliveries

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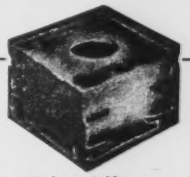

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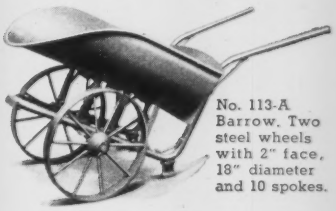

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are tending to lengthen. Makers of office furniture, metal tubing, armored cable, containers, kitchen ranges and door bucks, among manufacturers of end products, are ordering cold rolled more actively.

In general, shipments of hot sheets range three to four weeks; on cold rolled, five to six weeks. Producers of galvanized sheets are booked into January.

Semifinished Steel . . .

Semifinished Prices, Page 177

The national ingot rate slipped one half point last week to 74.5 per cent of capacity. The dip reflects deferred deliveries to the automotive industry. Cause: Local strikes. Now that they're mostly out of the way, a spurt in automotive specifying is expected shortly. It could push the ingot rate above 80 per cent of capacity.

Steelmaking capacity of Inland Steel Co., Indiana Harbor, Ind., next year will be 6,500,000 ingot tons, up 700,000 from its 1958 rating, and almost double its 3,400,000-ton rating of ten years ago.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 180

Industrial fastener producers have withdrawn discounts on hot-galvanized bolts and nuts in new lists dated Oct. 16. They are now quoting extras for electrozinc, cadmium and hot galvanized plating.

The new schedules raise discounts (lower net prices) on machine bolts and carriage bolts two to four points.

New schedules also have been issued on structural bolts. The new list dated Oct. 27 cancels one dated Sept. 26, 1958.

A new schedule on machine screws, stove bolts and machine screw nuts, dated Sept. 16, cancels one dated Nov. 15, 1957.

Tubular Goods . . .

Tubular Goods Prices, Page 181

There's still no noticeable improvement in demand for tubular goods, but producers are hopeful that the Memphis case decision will be handed down before yearend. If it is favorable, a good volume of linepipe business will probably be placed.

"Although our schedules were adversely affected by automotive strikes, we managed to ship more mechanical tubing last month than we did in September," a Pittsburgh mill executive reports. "We send the bulk of our goods to part suppliers; they continued to make parts while their customers' plants were closed down."

Iron Ore Statistics—September, 1958

(Gross Tons)

STOCKS AT FURNACE YARDS AND DOCKS ON LAST DAY OF MONTH

Stocks at:	U. S. Ores		Canadian		Foreign	
U. S. Furnaces	L. Superior	Other	L. Superior	Other	Ores	Totals
Eastern	5,423,117	171,212	274,052	1,922,741	4,212,403	12,003,525
Pitts.-Youngstown	12,637,467	49,253	688,719	2,634,650	4,079,569	20,089,658
Cleve.-Detroit	10,097,231	105,008	242,796	358,974	385,845	11,189,854
Chicago	13,858,992	(a)	(a)	.....	(a)	13,858,992
Southern	(a)	2,404,754	.....	(a)	1,903,935	4,308,689
Western	.....	874,780	.....	.....	.....	874,780
Totals	42,016,807	3,605,007	1,205,567	4,916,365	10,581,752	62,325,498
Stocks at:						
U. S. Docks						
Lake Erie	4,502,949	.....	91,193	1,093,167	.....	5,687,309
Other	.....	.....	.....	(a)	(a)	(a)
Totals	4,502,949	.....	91,193	1,093,167	.....	5,687,309
Total U. S. Stocks	46,519,756	3,605,007	1,296,760	6,009,532	10,581,752	68,012,807
Total Canadian	2,409,093	.....	167,719	605,223	101,842	3,283,877
Total U. S.-Canada	48,928,849	3,605,007	1,464,479	6,614,755	10,683,594	71,296,684

CONSUMPTION OF IRON ORE—SEPTEMBER, 1958

(Gross Tons)

In U. S. Districts:	U. S. Ores		Canadian		Foreign	
	L. Superior	Other	L. Superior	Other	Ores	Totals
Eastern	451,339	144,395	44,712	277,866	735,990	1,654,302
Pitts.-Youngstown	1,499,394	110,217	36,431	378,046	344,937	2,369,025
Cleve.-Detroit	869,881	36,525	50,788	29,819	82,563	1,069,576
Chicago	1,731,574	(a)	(a)	.....	(a)	1,731,574
Southern	.....	430,707	.....	(a)	141,654	572,361
Western	.....	502,943	.....	.....	.....	502,943
In U. S.						
Blast furnaces	3,659,265	864,250	98,273	373,457	483,223	5,478,468
Steel furnaces	162,152	65,554	13,862	13,295	378,638	633,501
Sintering (1)	730,755	293,881	19,796	298,979	442,350	1,763,365
Miscellaneous (2)	16	1,102	.....	.....	993	2,051
Total U. S.	4,552,188	1,224,787	131,931	685,731	1,305,144	7,899,781
In Canada:						
Blast furnaces	136,193	.....	56,683	55,133	.....	248,009
Steel furnaces	6	.....	.....	5,237	12,061	17,304
Sintering (1)	28,610	.....	719	19,741	.....	49,070
Total Canada	164,809	.....	57,402	80,111	12,061	491,968
Total U. S. & Canada	4,716,997	1,224,787	189,333	765,842	1,317,205	8,214,164

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

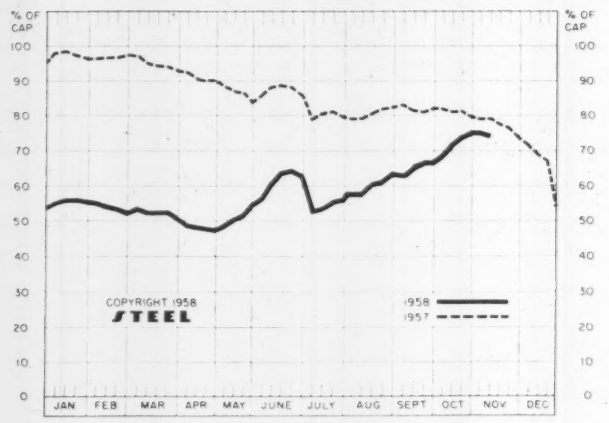
	Week Ended Nov. 9	Change	Same Week 1957	Same Week 1956
Pittsburgh	69	— 0.5	81.5	101
Chicago	83	— 2	80	99.5
Eastern	72	0	83	102
Youngstown	64	0	66	101
Wheeling	84.5	+ 1.5	71	101
Cleveland	72.5	— 7.5	85.5	99
Buffalo	75.5	— 2.5	90	107.5
Birmingham	60	— 3.5	67	95.5
Cincinnati	85	+ 2*	80	94
St. Louis	96	+ 5.5*	91	107
Detroit	80.5	— 3.5*	94.5	101
Western	78	+ 3	91	109
National Rate	74.5	— 0.5	79	101

INGOT PRODUCTION‡

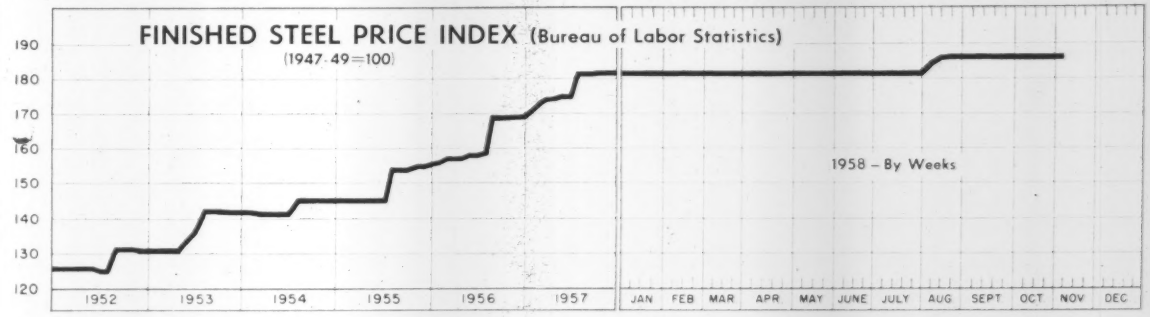
	Week Ended Nov. 9	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	125.2†	126.0	120.3	124.3
NET TONS (In thousands)	2,011†	2,024	1,933	1,996

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Nov. 4, 1958	Week Ago	Month Ago	Oct. Avg	Year Ago
187.3	186.7	186.6	186.6	181.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Nov. 4

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825
Rails, Light, 40 lb	7.292
Tie Plates	6.875
Axles, Railway	10.175
Wheels, Freight Car, 33 in. (per wheel)	62.000
Plates, Carbon	6.350
Structural Shapes	6.167
Bars, Tool Steel, Carbon (lb)	0.560
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895
Bars, H.R., Alloy	10.775
Bars, H.R., Stainless, 303 (lb)	0.525
Bars, H.R., Carbon	6.675
Bars, Reinforcing	6.385
Bars, C.F., Carbon	10.710
Bars, C.F., Alloy	14.125
Bars, C.F., Stainless, 302 (lb)	0.553
Sheets, H.R., Carbon	6.350
Sheets, C.R., Carbon	7.300
Sheets, Galvanized	8.615
Sheets, C.R., Stainless, 302 (lb)	0.688
Sheets, Electrical	12.625
Strip, C.R., Carbon	9.489
Strip, C.R., Stainless, 430 (lb)	0.493
Strip, H.R., Carbon	6.250
Pipe, Black, Buttweld (100 ft)	20.525
Pipe, Galv., Buttweld (100 ft)	23.975
Pipe, Line (100 ft)	205.710
Casing, Oil Well, Carbon (100 ft)	201.080
Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200
Tubing, Mechanical, Carbon (100 ft)	26.157
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800
Black Plate, Canmaking Quality (95 lb base box)	7.900
Wire, Drawn, Carbon	10.575
Wire, Drawn, Stainless, 430 (lb)	0.653
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.828
Wire, Barbed (80-rod spool)	8.719
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Nov. 5 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	246.65	246.65	239.15	189.38
Index in cents per lb	6.713	6.682	6.682	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.96	$149.28	$149.28	$146.03	$115.18
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	42.33	42.00	42.33	33.33	35.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Nov. 5 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.975-4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45-5.95
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods 5/32-9/16" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton	Nov. 5 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	60.75
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.51	61.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$44.50	$43.50	$43.50	$31.50	$36.50
No. 1 Heavy Melt, E. Pa.	40.00	40.00	42.00	35.50	35.00
No. 1 Heavy Melt, Chicago	42.50	42.50	41.50	33.00	33.50
No. 1 Heavy Melt, Valley	43.50	43.50	43.50	32.50	35.50
No. 1 Heavy Melt, Cleve.	40.00	40.00	40.00	29.50	33.50
No. 1 Heavy Melt, Buffalo	35.50	35.50	35.50	32.50	34.50
Rails, Rerolling, Chicago	62.00	62.00	63.50	48.50	45.00
No. 1 Cast, Chicago	45.50	45.50	43.50	35.50	33.50

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	30.50	30.50	30.50	30.50	25.25

A painter prompted a new look

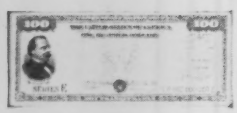
When one of our maintenance department painters was redecorating the treasurer's office, he asked about U.S. Savings Bonds. "If I could buy these Bonds on installments," he said, "and you could take my payments out before I got my paycheck, I'd hardly miss it."

Our treasurer explained that the Payroll Savings Plan does exactly that and gave the painter an application card. But the matter didn't end there, for our painter had given *us* something, too: an idea that helped to put real color into our plan.

He made us realize that if he was unfamiliar with this plan, many others must be in exactly the same position.

Our State Savings Bond Director helped us pass the word. Under his direction, we set up a company-wide campaign that gave the whole Payroll Savings story to every person in the Company. Within a few days we had the best employee participation we've had since the mid-forties.

People are quick to take advantage of this sound, automatic way to save money. Today there are more payroll savers than ever before in peacetime. Look up your State Director in the phone book or write: Savings Bonds Division, U.S. Treasury Department, Washington, D.C.



STEEL
The Metalworking Weekly

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE

Steel Prices

Mill prices as reported to STEEL, Nov. 5, cents per pound except as otherwise noted. Changes shown in italics. Code number following mill points indicates producing company. Key to producers, page 178; footnotes, page 180.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ....$76.00

INGOTS, Alloy (NT)
Detroit S41 ....$82.00
Economy,Pa. B14 ....82.00
Farrell,Pa. S3 ....82.00
Lowellville,O. S3 ....82.00
Midland,Pa. C18 ....82.00
Munhall,Pa. U5 ....82.00
Sharon,Pa. S3 ....82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 ....80.00
Buffalo R2 ....80.00
Clairton,Pa. U5 ....80.00
Ensley,Ala. T2 ....80.00
Fairfield,Ala. T2 ....80.00
Fontana,Calif. K1 ....90.50
Gary,Ind. U5 ....80.00
Johnstown,Pa. B3 ....80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 ....80.00
Owensboro,Ky. G8 ....80.00
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 ....80.00
Youngstown R2 ....80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$99.50
Buffalo R2 ....99.50
Canton,O. R2 ....102.00
Clairton,Pa. U5 ....99.50
Conshohocken,Pa. A3..104.50
Ensley,Ala. T2 ....99.50
Fairfield,Ala. T2 ....99.50
Farrell,Pa. S3 ....99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 ....99.50
Geneva,Utah C11 ....99.50
Houston S5 ....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2 ..99.50
LosAngeles B3 ....109.00
Midland,Pa. C18 ....99.50
Munhall,Pa. U5 ....99.50
Owensboro,Ky. C8 ....99.50
Seattle B3 ....113.00
Sharon,Pa. S3 ....99.50
S.Chicago R2, U5, W14..99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ...109.00
Warren,O. C17 ....99.50

Alloy, Forging (NT)
Bethlehem,Pa. R2 ..$119.00
Bridgeport,Conn. C32 .119.00
Buffalo R2 ....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3..126.00
Detroit S41 ....119.00
Economy,Pa. B14 ....119.00
Farrell,Pa. S3 ....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 ....119.00
Houston S5 ....124.00
Ind.Harbor,Ind. Y1 ..119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 ....139.00
Lowellville,O. S3 ....119.00
Massillon,O. R2 ....119.00
Midland,Pa. C18 ....119.00
Munhall,Pa. U5 ....119.00
Owensboro,Ky. G8 ....119.00
Sharon,Pa. S3 ....119.00
S.Chicago R2,U5,W14.119.00
S.Duquesne,Pa. U5 ..119.00
Struthers,O. Y1 ....119.00
Warren,O. C17 ....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$122.50
Canton,O R2 ....125.00
Cleveland R2 ....122.50
Gary,Ind. U5 ....122.50
S Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 ..122.50
Warren,O. C17 ....122.50

SKELP
Aliquippa,Pa. J5 ....5.05
Munhall,Pa. U5 ....5.05
Pittsburgh J5 ....5.05
Warren,O. R2 ....5.05
Youngstown R2, U5 ....5.05

WIRE RODS
AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 ....6.40
Alton,Ill. L1 ....6.60
Bartonville,Ill. K4 ....6.50
Buffalo W12 ....6.40
Cleveland A7 ....6.40
Donora,Pa. A7 ....6.40
Fairfield,Ala. T2 ....6.40
Houston S5 ....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 ....6.40
Joliet,Ill. A7 ....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 ....6.50
LosAngeles B3 ....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 ....6.40
N.Tonawanda,N.Y. B11..6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 ....6.50
S.Chicago,Ill. R2, W14 ..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 ....6.50
Struthers,O. Y1 ....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.50
Aliquippa,Pa. J5 ....5.50
Atlanta A11 ....5.70
Bessemer,Ala. T2 ....5.50
Bethlehem,Pa. B2 ....5.55
Birmingham C15 ....5.50
Clairton,Pa. U5 ....5.50
Fairfield,Ala. T2 ....5.50
Fontana,Calif. K1 ....6.30
Gary,Ind. U5 ....5.50
Geneva,Utah C11 ....5.50
Houston S5 ....5.60
Ind.Harbor,Ind. I-2, Y1..5.50
Johnstown,Pa. B2 ....5.55
Joliet,Ill. P22 ....5.50
KansasCity,Mo. S5 ....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 ....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 ....5.50
Niles,Calif. P1 ....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 ....6.25
Seattle B3 ....6.25
S.Chicago,Ill. U5, W14..5.50
S.SanFrancisco B3 ....6.15
Sterling,Ill. N15 ....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 ....5.55
Clairton,Pa. U5 ....5.50
Fontana,Calif. K1 ....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 ....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....6.90
Munhall,Pa. U5 ....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 ....8.05
Bessemer,Ala. T2 ....8.05
Bethlehem,Pa. B2 ....8.10
Clairton,Pa. U5 ....8.05
Fairfield,Ala. T2 ....8.05
Fontana,Calif. K1 ....8.85
Gary,Ind. U5 ....8.05
Geneva,Utah C11 ....8.05
Houston S5 ....8.15
Ind.Harbor,Ind. I-2, Y1..8.05
Johnstown,Pa. B2 ....8.10
KansasCity,Mo. S5 ....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 ....8.75
Munhall,Pa. U5 ....8.05
Seattle B3 ....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 ....8.70
Struthers,O. Y1 ....8.05

H. S., L.A. Wide Flange
Bethlehem,Pa. B2 ....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 ....8.05
S.Chicago,Ill. U5 ....8.05

PILING

BEARING PILES
Bethlehem,Pa. B2 ....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
S Chicago,Ill. J-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 ....6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 ....5.30
Ashland,Ky.(15) A10 ..5.30
Atlanta A11 ....5.50
Bessemer,Ala. T2 ....5.30
Clairton,Pa. U5 ....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 ....5.30
Coatesville,Pa. L7 ....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 ....5.30
Fairfield,Ala. T2 ....5.30
Farrell,Pa. S3 ....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 ....5.30
Geneva,Utah C11 ....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 ....5.30
Houston S5 ....5.40
Ind.Harbor,Ind. I-2, Y1..5.30
Johnstown,Pa. B2 ....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 ....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 ....5.30
Newport,Ky. - A2 ....5.30
Pittsburgh J5 ....5.30
Riverdale,Ill. A1 ....5.50
Seattle B3 ....6.20
Sharon,Pa. S3 ....5.30
S.Chicago,Ill. U5, W14..5.30
SparrowsPoint,Md. B2 ..5.30
Sterling,Ill. N15 ....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 ....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 ....5.30

PLATES, Carbon Abras. Resist
Claymont,Del. C22 ....6.75
Fontana,Calif. K1 ....7.55
Geneva,Utah C11 ....7.05
Houston S5 ....7.15
Johnstown,Pa. B2 ....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 ....13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ....7.95
Ashland,Ky. A10 ....7.95
Bessemer,Ala. T2 ....7.95
Clairton,Pa. U5 ....7.95
Claymont,Del. C22 ....7.95
Cleveland J5, R2 ....7.95
Coatesville,Pa. L7 ....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 ....7.95
Ecorse,Mich. G5 ....7.95
Fairfield,Ala. T2 ....7.95
Farrell,Pa. S3 ....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 ....7.95
Geneva,Utah C11 ....7.95
Houston S5 ....8.05
Ind.Harbor,Ind. I-2, Y1..7.95
Johnstown,Pa. B2 ....7.95
Munhall,Pa. U5 ....7.95
Pittsburgh J5 ....7.95
Seattle B3 ....8.85
Sharon,Pa. S3 ....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 ....7.95
Youngstown U5, Y1 ....7.95

PLATES, ALLOY
Aliquippa,Pa. J5 ....7.50
Claymont,Del. C22 ....7.50
Coatesville,Pa. L17 ....7.50
Economy,Pa. B14 ....7.50
Farrell,Pa. S3 ....7.50
Fontana,Calif. K1 ....8.30
Gary,Ind. U5 ....7.50
Houston S5 ....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 ....7.50
Lowellville,O. S3 ....7.50
Munhall,Pa. U5 ....7.50
Newport,Ky. A2 ....7.50
Pittsburgh J5 ....7.50
Seattle B3 ....8.40
Sharon,Pa. S3 ....7.50
S.Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 ....7.50

FLOOR PLATES
Cleveland J5 ....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ....6.375
Munhall,Pa. U5 ....6.375
Pittsburgh J5 ....6.375
S.Chicago,Ill. U5 ....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.55
Ashland l.c.l.(15) A10 ..6.05
Cleveland c.l. R2 ....6.05
Warren,O. c.l. R2 ....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa.(9) J5 ..5.675
Alton,Ill. L1 ....5.875
Atlanta(9) A11 ....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ..5.675
Buffalo(9) R2 ....5.675
Canton,O.(23) R2 ....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 ....5.675
Ecorse,Mich.(9) G5 ..5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1 ..6.375
Gary,Ind.(9) U5 ....5.675
Houston(9) S5 ....5.925
Ind.Harbor(9) I-2, Y1..5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 ....5.675
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 ....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ..6.025
Milton,Pa. M18 ....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 ....6.375
N.Tonawanda,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ..6.025
Pittsburg,Calif.(9) C11 6.375
Pittsburgh(9) J5 ....5.675
Portland,Oreg. O4 ....6.425
Riverdale,Ill.(9) A1 ..5.675
Seattle B3, N14 ....6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5..5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ....5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ..5.675
Torrance,Calif.(9) C11 6.375
Warren,O. C17 ....6.025
Youngstown(9) R2, U5 5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.725
Bethlehem,Pa. B2 ....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 ....6.725
Canton,O. R2, T7 ....6.725
Clairton,Pa. U5 ....6.725
Detroit S41 ....6.725
Economy,Pa. B14 ....6.725
Ecorse,Mich. G5 ....6.725
Fairless,Pa. U5 ....6.875
Farrell,Pa. S3 ....6.725
Fontana,Calif. K1 ....7.775
Gary,Ind. U5 ....6.725
Houston S5 ....6.975
Ind.Harbor,Ind. I-2, Y1..6.725
Johnstown,Pa. B2 ....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2..6.725
LosAngeles B3 ....7.775
Lowellville,O. S3 ....6.725
Massillon,O. R2 ....6.725
Midland,Pa. C18 ....6.725
Owensboro,Ky. G8 ....6.725
Pittsburgh J5 ....6.725
Sharon,Pa. S3 ....6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 ....6.725
Warren,O. C17 ....6.725
Youngstown U5 ....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ....8.30
Bessemer,Ala. T2 ....8.30
Bethlehem,Pa. B2 ....8.30
Clairton,Pa. U5 ....8.30
Cleveland R2 ....8.30
Ecorse,Mich. G5 ....8.30
Fairfield,Ala. T2 ....8.30
Fontana,Calif. K1 ....9.00
Gary,Ind. U5 ....8.30
Houston S5 ....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 ....8.30
KansasCity,Mo. S5 ....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 ....9.00
Pittsburgh J5 ....8.30
Seattle B3 ....9.05
S.Chicago,Ill. R2, W14..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 ....8.30
Youngstown U5 ....8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 ....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 ....5.775
Sterling,Ill.(1) N15 ....5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES: S. Shapes
Aliquippa,Pa. J5 ....5.675
Atlanta A11 ....5.875
Joliet,Ill. P22 ....5.675
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 ....6.375
Pittsburgh J5 ....5.675
Portland,Oreg. O4 ....6.425
SanFrancisco S7 ....6.52
Seattle B3 ....6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 ....6.80
Youngstown U5 ....6.80

BARS, C.F. Leaded (Including leaded extra)

Carbon	
LosAngeles P2, S30	..11.75*
Alloy	
Ambridge,Pa. W18	..10.175
BeaverFalls,Pa. M12	..10.175
Camden,N.J. P13	....10.35
Chicago W18	....10.175
Elyria,O. W8	....10.175
Monaca,Pa. S17	....10.175
Newark,N.J. W18	....10.35
SpringCity,Pa. K3	....10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.65
BeaverFalls,Pa. M12,R2..7.65
Birmingham C15 ....8.25
Buffalo B5 ....7.70
Camden,N.J. P13 ....8.10
Carnegie,Pa. C12 ....7.65
Chicago W18 ....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 ....7.85
Detroit S41 ....7.65
Donora,Pa. A7 ....7.65
Elyria,O. W8 ....7.65
FranklinPark,Ill. N5 ....7.65
Gary,Ind. R2 ....7.65
GreenBay,Wis. F7 ....7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 ....8.15
Harvey,Ill. B5 ....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2..9.10
Mansfield,Mass. B2 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 ....7.65
Monaca,Pa. S17 ....7.65
Newark,N.J. W18 ....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 ....7.65
Plymouth,Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 ....8.10
Struthers,O. Y1 ....7.65
Warren,O. C17 ....7.65
Waukegan,Ill. A7 ....7.65
Willimantic,Conn. J5 ...8.15
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19..6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ...9.025
BeaverFalls,Pa.M12,R2 9.025
Bethlehem,Pa. B2 ....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 ....9.025
Camden,N.J. P13 ....9.20
Canton,O. T7 ....9.025
Carnegie,Pa. C12 ....9.025
Chicago W18 ....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 ....9.225
Detroit S41 ....9.025
Donora,Pa. A7 ....9.025
Elyria,O. W8 ....9.025
FranklinPark,Ill. N5 ..9.025
Gary,Ind. R2 ....9.025
GreenBay,Wis. F7 ....9.025
Hammond,Ind. J5, L2..9.025
Hartford,Conn. R2 ....9.325
Harvey,Ill. B5 ....9.025
Lackawanna,N.Y. B2 ..9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5....9.325
Massillon,O. R2, R8 ...9.025
Midland,Pa. C18 ....9.025
Monaca,Pa. S17 ....9.025
Newark,N.J. W18 ....9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 ....9.20
Struthers,O. Y1 ....9.025
Warren,O. C17 ....9.025
Waukegan,Ill. A7 ....9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ....9.325
Youngstown F3, Y1 ....9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 ....6.375
Ft.Worth,Tex.(4)(26)T4 6.125
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ....5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 .....6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14 .5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2..5.675
Sterling,Ill.(1) N15 ...5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. .B12 ...6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ...5.675

BARS, Reinforcing, Billet (Fabricated; to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ...7.33
St. Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt)B14 19.00

BARS, Rail Steel

ChicagoHts.(3) C2, I-2.5.575
ChicagoHts.(4)(44) I-2.5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 .....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ....5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1 .5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ...5.80
Pittsburgh J5 .....5.20
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 ....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1.7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14.7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ....5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ...6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 ....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ...6.375
Ind.Harbor,Ind. I-2, Y1.6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ..7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 .....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2,Y1.9.275
Irvin,Pa. U5 .....9.275
Lackawanna(37) B2 ...9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
SparrowsPt. B2	7.225	....
Pittsburgh J5	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 .....6.875‡
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10 .6.875*
Middletown,O. A10 ...6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.125
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 .....10.125

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Youngstown J5 .....7.50
Weirton,W.Va. W6 .....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2,Y1.6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W.Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	..5.10
Allenport,Pa. P7	.....5.10
Alton,Ill. L1	.....5.30
Ashland,Ky.(8) A10	....5.10
Atlanta A11	.....5.10
Bessemer,Ala. T2	.....5.10
Birmingham C15	.....5.10
Buffalo(27) R2	.....5.10
Conshohocken,Pa. A3	..5.15
Detroit M1	.....5.10
Ecorse,Mich. G5	.....5.10
Fairfield,Ala. T2	.....5.10
Farrell Pa. S3	.....5.10
Fontana,Calif. K1	....5.825
Gary,Ind. U5	.....5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2 N5	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	....5.85
LosAngeles C1	.....8.60
Minnequa,Colo. C10	....6.20
Riverdale,Ill. A1	.....5.10
SanFrancisco S7	.....6.60
Seattle(25) B3	.....6.10
Seattle N14	.....6.60
Sharon,Pa. S3	.....5.10
S.Chicago W14	.....5.10
S.SanFrancisco(25) B3	..5.85
SparrowsPoint,Md. B2	..5.10
Torrance,Calif. C11	....5.85
Warren,O. R2	.....5.10
Weirton,W Va. W6	....5.10
Youngstown U5	.....5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	.....8.40
Farrell,Pa. S3	.....8.40
Gary,Ind. U5	.....8.40
Houston S5	.....8.65
Ind.Harbor,Ind. Y1	....8.40
KansasCity,Mo. S5	....8.65
LosAngeles B3	.....9.60
Lowellville,O. S3	.....8.40
Newport Ky. A2	.....8.40
Sharon,Pa. A2, S3	....8.40
S.Chicago,Ill. W14	....8.40
Youngstown U5, Y1	....8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10	....7.575
Bessemer,Ala. T2	....7.575
Conshohocken,Pa. A3	..7.575
Ecorse,Mich. G5	.....7.575
Fairfield,Ala. T2	....7.575
Farrell,Pa. S3	.....7.575
Gary,Ind. U5	.....7.575
Ind.Harbor,Ind. I-2,Y1	7.575
Lackawanna,N.Y. B2	..7.575
LosAngeles(25) B3	..8.325
Seattle(25) B3	.....8.575
Sharon,Pa. S3	.....7.575
S.Chicago,Ill. W14	....7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	.....7.575
Weirton,W Va. W6	....7.575
Youngstown U5, Y1	...7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	..5.35
Warren,O. R2	.....5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	....7.425
Baltimore T6	.....7.425
Boston T6	.....7.975
Buffalo S10	.....7.425
Cleveland A7, J5	.....7.425
Dearborn,Mich. S3	....7.425
Detroit D2, M1, P20	..7.425
Dover,O. G6	.....7.425
Evanston,Ill. M22	....7.525
Farrell Pa. S3	.....7.425
Follansbee,W Va. F4	..7.425
Fontana,Calif. K1	....9.20
FranklinPark,Ill. T6	..7.525
Ind.Harbor,Ind. Y1	....7.425
Indianapolis S41	.....7.575
LosAngeles J5	.....9.325
Los Angeles C1	.....9.30
McKeesport,Pa. E10	...7.525
NewBedford,Mass. R10	.7.875
NewBritain,Conn. S15	..7.875
NewCastle,Pa. B4, E5	.7.425
NewHaven,Conn. D2	..7.875
NewKensington,Pa. A6	7.425
Pawtucket,R.I. R3	....7.975
Pawtucket,R.I. N8	...7.975
Philadelphia P24	....7.875
Pittsburgh J5	.....7.425
Riverdale,Ill. A1	.....7.525
Rome,N.Y.(32) R6	....7.425
Sharon,Pa. S3	.....7.425
Trenton,N J (31) R5	..8.875
Wallingford,Conn. W2	..7.875
Warren,O. R2, T5	...7.425
Worcester,Mass. A7	..7.975
Youngstown S41, Y1	..7.425

STRIP, Cold-Rolled Alloy

Boston T6	.....15.90
Carnegie,Pa. S18	.....15.55
Cleveland A7	.....15.55
Dover,O. G6	.....15.55
Farrell,Pa. S3	.....15.55
FranklinPark,Ill. T6	..15.55
Harrison,N.J. C18	....15.55
Indianapolis S41	....15.70
Lowellville,O. S3	....15.55
Pawtucket,R.I. N8	....15.90
Riverdale,Ill. A1	.....15.55
Sharon,Pa. S3	.....15.55
Worcester,Mass. A7	...15.85
Youngstown S41	.....15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	.....10.80
Dearborn,Mich. S3	....10.80
Dover,O. G6	.....10.80
Farrell,Pa. S3	.....10.80
Ind.Harbor,Ind. Y1	...10.80
Sharon,Pa. S3	.....10.80
Warren,O. R2	.....10.80

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	....	....	12.60	15.60	18.55
LosAngeles C1	9.10	10.55	12.60	15.60	18.55
LosAngeles J5	11.15	12.60	14.80	17.80	....
NewBritain,Conn. S15	11.15	12.60	14.80	....	....
NewCastle,Pa. B4, E5	9.40	10.70	12.90	15.90	18.85
NewHaven,Conn. D2	8.95	10.40	12.60	15.60	....
NewKensington,Pa. A6	9.40	10.70	12.90	15.90	....
New York W3	8.95	10.40	12.60	15.60	....
Pawtucket,R.I. N8	...	10.70	12.90	16.10	19.30
Riverdale,Ill. A1	9.50	10.70	12.90	15.90	18.85
Rome,N.Y.(32) R6	9.05	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	8.95	10.40	12.60	15.60	18.55
Wallingford,Conn. W2	...	10.70	12.90	15.90	18.85
Warren,O. T5	9.40	10.70	12.90	15.90	18.75
Worcester,Mass. A7, T6	8.95	10.40	12.60	15.60	18.55
Youngstown S41	9.50	10.70	12.90	15.90	18.85

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.85	....	....
Fostoria,O. S1	19.05	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
NewYork W3	18.85	22.95	27.80
Palmer,Mass. W12	18.85	....	....
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown S41	19.20	23.30	28.15

Weirton,W.Va. W6 ....10.80
Youngstown Y1 .....10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	.....7.425*
Dover,O. G6	.....7.425*
Evanston,Ill. M22	....7.525*
McKeesport,Pa. E10	...7.50*
Riverdale,Ill. A1	....7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	..7.975
Youngstown S41	.....7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	.....7.50
Sharon,Pa. S3	.....7.50

TIGHT COOPERAGE HOOP

Atlanta A11	.....5.65
Farrell, Pa. S3	.....5.525
Riverdale,Ill. A1	....5.675
Sharon,Pa. S3	.....5.525
Youngstown U5	.....5.525

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c low-er)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875	11.20*	11.90*	13.05*	....
Manafield,O. E6	9.875	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875	11.70	12.40	13.55	14.65
Warren,O. R2	9.875	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10

SHEETS (22 Ga., coils & cut lengths)

Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler,Pa A10	....	....	....	19.70	20.20	20.70
Vandergrift,Pa. U5	..	17.10	18.10	19.70	20.20	20.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless,Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint,Md. B2	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American 1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fairless,Pa. U5	10.50	10.75
Fontana,Calif.K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Pitts.,Calif. C11	11.05	11.30
Sp.Pt.Md. B2	10.40	10.65
Weirton,W.Va.W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$8.20
Fairfield,Ala. T2	8.30
Fairless,Pa. U5	8.30
Fontana,Calif. K1	8.85
Gary,Ind. U5	8.20
GraniteCity,Ill. G4	8.30
Ind.Harbor,Ind. I-2, Y1	8.20
Irvin,Pa. U5	8.20
Niles,O. R2	8.20
Pittsburg,Calif. C11	8.85
SparrowsPoint,Md. B2	8.25
Weirton,W.Va. W6	8.20
Yorkville,O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	.....7.85
Gary,Ind. U5	.....7.85
GraniteCity,Ill. G4	....7.95
Ind.Harbor,Ind. Y1	....7.85
Irvin,Pa. U5	.....7.85
Yorkville,O. W10	.....7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	.....$9.70
Irvin,Pa. U5	.....9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5	.....$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	..8.00
Aliquippa,Pa. J5	.....8.00
Alton,Ill. L1	.....8.20
Atlanta A1	.....8.00
Bartonville,Ill. K4	....8.10
Buffalo W12	.....8.00
Chicago W13	.....8.00
Cleveland A7, C20	....8.00
Crawfordsville,Ind. M8	..8.10
Donora,Pa. A7	.....8.00
Duluth A7	.....8.00
Fairfield,Ala. T2	.....8.00
Fostoria,O.(24) S1	....8.10
Houston S5	.....8.25
Jacksonville,Fla. M8	..8.35
Johnstown,Pa. B2	.....8.00
Joliet,Ill. A7	.....8.00
KansasCity,Mo. S5	....8.25
Kokomo,Ind. C16	.....8.10
LosAngeles B3	.....8.95
Minnequa,Colo. C10	....8.25
Monessen,Pa. P7, P16	..8.00
N.Tonawanda,N.Y. B11	.8.00
Palmer,Mass. W12	....8.30
Pittsburg,Calif. C11	....8.95
Portsmouth,O. P12	....8.00
Rankin,Pa. A7	.....8.00
S.Chicago,Ill. R2	.....8.00
S.SanFrancisco C10	....8.95
SparrowsPoint,Md. B2	..8.10
Sterling,Ill.(1) N15	....8.00
Sterling,Ill. N15	.....8.10
Struthers,O. Y1	.....8.00
Waukegan,Ill. A7	.....8.00
Worcester,Mass. A7	....8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	.....8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill K4	....12.65
Buffalo W12	.....13.40
Cleveland A7	.....12.65
Donora,Pa. A7	.....12.65
Duluth A7	.....12.65
Johnstown,Pa. B2	....13.40
Minnequa,Colo. C10	..12.775
Monessen,Pa. P16	....12.65
Monessen,Pa. P7	.....12.65
Muncie,Ind. I-7	.....13.60
NewHaven,Conn. A7	..12.95
Palmer,Mass. W12	...13.70
Pittsburg,Calif. C11	...13.45
Portsmouth,O. P12	....12.65
Roebling,N.J. R5	.....12.95
SparrowsPt.,Md. B2	...13.50
Struthers,O. Y1	.....13.40
Trenton,N.J. A7	.....12.95
Waukegan,Ill. A7	....12.65
Worcester,Mass. A7	...12.95

WIRE Upholstery Spring

Aliquippa,Pa. J5	.....9.75
Alton,Ill. L1	.....9.95
Buffalo W12	.....9.75
Cleveland A7	.....9.75
Donora,Pa. A7	.....9.75
Duluth A7	.....9.75
Johnstown,Pa. B2	....9.75
KansasCity,Mo. S5	....10.00
LosAngeles B3	.....10.70
Minnequa,Colo. C10	....9.95
Monessen,Pa. P7, P16	..9.75
NewHaven,Conn. A7	..10.05
Palmer,Mass. W12	....10.05
Pittsburg,Calif. C11	...10.70
Portsmouth,O. P12	....9.75
Roebling,N.J. R5	.....10.05
S.Chicago,Ill. R2	.....9.75
S.SanFrancisco C10	....10.70
SparrowsPt.,Md. B2	....9.85
Struthers,O. Y1	.....9.75
Trenton,N.J. A7	.....10.05
Waukegan,Ill. A7	.....9.75
Worcester,Mass. A7	...10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	.....9.75
Alton,Ill. L1	.....9.95
Bartonville,Ill. K4	....9.85
Buffalo W12	.....9.75
Cleveland A7	.....9.75
Donora,Pa. A7	.....9.75
Duluth A7	.....9.75
Fostoria,O. S1	.....9.80
Johnstown,Pa. B2	....9.75
KansasCity,Mo. S5	....10.00
LosAngeles B3	.....10.70
Milbury,Mass.(12) N6	.10.05
Minnequa,Colo. C10	...9.95
Monessen,Pa. P7, P16	..9.75
Muncie,Ind. I-7	.....9.95
Palmer,Mass. W12	....10.05
Pittsburg,Calif. C11	...10.70
Portsmouth,O. P12	....9.75
Roebling,N.J. R5	.....10.05
S.Chicago,Ill. R2	.....9.75
S.SanFrancisco C10	...10.70
SparrowsPt.,Md. B2	...9.85
Struthers,O. Y1	.....9.75
Trenton,N.J. A7	.....10.05
Waukegan,Ill. A7	.....9.75
Wor'ster,Mass.A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	.....16.50
Bartonville,Ill. K4	...16.40
Chicago W13	.....16.30
Cleveland A7	.....16.30
Crawfordsville,Ind. M8	.16.40
Fostoria,O. S1	.....16.30
Houston S5	.....16.55
Jacksonville,Fla. M8	..16.65
Johnstown,Pa. B2	....16.30
KansasCity,Mo. S5	....16.55
Kokomo,Ind. C16	....16.30
Minnequa,Colo. C10	...16.55
Monessen,Pa. P16	.....16.30
Muncie,Ind. I-7	.....16.50
Palmer,Mass. W12	....16.60
S.SanFrancisco C10	....17.15
Waukegan,Ill. A7	.....16.30
Worcester,Mass. A7, J6	.16.60

WIRE, Tire Bead

Bartonville,Ill. K4	....17.15
Monessen,Pa. P16	.....17.15
Roebling,N.J. R5	.....17.65

ROPE WIRE

	(A)
Bartonville,Ill. K4	....13.45
Buffalo W12	.....13.45
Fostoria,O. S1	.....13.45
Johnstown,Pa. B2	....13.45
Monessen,Pa. P7	.....13.45
Muncie,Ind. I-7	.....13.45
Palmer,Mass. W12	....13.75
Portsmouth,O. P12	....13.45
Roebling,N.J. R5	.....13.75
St.Louis L8	.....12.75
SparrowsPt.,Md. B2	..13.55
Struthers,O. Y1	.....13.45
Worcester,Mass. J4	...13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	11.65
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer,Mass. W12	12.65
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N. Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock — **Col.**

AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt., Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg) To Dealers (33)

Wheeling W Va. W10	$9.80

POLISHED STAPLES — **Col.**

AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.) (per 97 lb Net Box) Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.,(37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville Fla. M8	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S. Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop — **Col.**

AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	172
Franklin,Pa. F5	177
Johnstown,Pa. B2	*177*
Marion,O. P11	*177*
Minnequa,Colo. C10	177
Sterling,Ill (7) N15	177
Tonawanda,N.Y. B12	172

WIRE, Barbed — **Col.**

AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga. — **Col.**

Ala.City,Ala. R2	187**
Aliq'ppa,Pa. 9-11½ga. J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville K4	17.95	19.75
Cleveland A7	17.85	
Craw'dsville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	17.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	
Kokomo C16	17.25	18.80‡
Minnequa C10	18.10	19.65**
P'lm'r,Mass. W12	18.15	19.70†
Pitts.,Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
SparrowsPt. B2	17.95	19.75§
Sterling(37) N15	17.25	19.05††
Waukegan A7	17.85	19.40†
Worcester A7	18.15	

WIRE, Merchant Quality (6 to 8 gage) An'ld Galv.

Ala.City,Ala.	R2	9.00 9.55**
Aliquippa	J5	8.65 9.325§
Atlanta(48)	A11	9.10 9.775§
Bartonville(48)	K4	9.10 9.775
Buffalo	W12	9.00 9.55†
Cleveland	A7	9.00
Crawfordsville	M8	9.10 9.80‡‡
Donora,Pa.	A7	9.00 9.55†
Duluth	A7	9.00 9.55†
Fairfield	T2	9.00 9.55†
Houston(48)	S5	9.25 9.80**
Jack'ville,Fla.	M8	9.10 9.80‡‡
Johnstown	B2(48)	9.00 9.675§
Joliet,Ill	A7	9.00 9.55†
Kans.City(48)	S5	9.25 9.80**
Kokomo(48)	C16	9.10 9.65†
LosAngeles	B3	9.95 10.625§
Monessen	P7(48)	8.65 9.35§
Palmer,Mass.	W12	9.30 9.85†
Pitts.,Calif.	C11	9.95 10.50†
Rankin,Pa.	A7	9.00 9.55†
S.Chicago	R2	9.00 9.55**
S.SanFran.	C10	9.95 10.50**
Spar'wsPt.	B2(48)	9.10 9.775§
Sterling(48)	N15	9.25 9.925††
Sterling(1) (48)		9.15 9.825††
Struthers,O.	Y1	9.00 9.65‡
Worcester,Mass.	A7	9.30 9.85†

Based on zince price of: *13.50, †5c, §10c, ‡Less than 10c, ††10.50c, ‡‡11.00c, **Subject to zinc equalization extras.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)
½ in. and smaller:
3 in. and shorter .. 55.0
3¼ in. thru 6 in. .. 50.0
Longer than 6 in. .. 37.0
⅝ in., 3 in. & shorter 47.0
3¼ in. thru 6 in. .. 40.0
Longer than 6 in. .. 31.0
¾ in. thru 1 in.:
6 in. and shorter .. 37.0
Longer than 6 in. .. 31.0
1¼ in. and larger:
All lengths 31.0
Undersize Body (rolled thread)
½ in. and smaller:
3 in. and shorter .. 55.0
3¼ in. thru 6 in. .. 50.0

Carriage Bolts
Full Size Body (cut thread) & Undersize Body (rolled thread)
½ in. and smaller:
6 in. and shorter .. 48.0
Larger diameters and longer lengths 35.0

Lag, Plow, Tap, Blank, Step, Elevator, Tire, and Fitting Up Bolts
½ in. and smaller:
6 in. and shorter .. 48.0
Larger diameters and longer lengths 35.0

High Tensile Structural Bolts
(Reg. semifinished hex head bolts, standard heavy double chamfered hex nuts. Bolts — High-carbon steel, heat treated. Spec. ASTM A-325, in bulk. Full keg quantity)

⅝ in. diam.	50.0
¾ in. diam.	47.0
⅞ and 1 in. diam...	43.0
1⅛ and 1¼ in. diam.	34.0

NUTS
(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:
All sizes 56.0

(Full container)

Hex Nuts, Reg. & Heavy
Hot Pressed & Cold Punched:

¾ in. and smaller..	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger..	51.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller..	62.0
⅞ in. to 1½-in., incl.	56.0
1⅝ in. and larger..	51.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

⅞ in. and smaller..	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger..	51.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller..	62.0
¾ in. to ⅞ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger..	51.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)
Hex Head Capscrews, Coarse or Fine Thread, Bright:
6 in. and shorter:

⅝ in. and smaller..	35.0
¾, ⅞, and 1 in. ...	16.0
Longer than 6 in.:	
⅝ in. and smaller..	3.0
¾, ⅞, and 1 in. ..	+11.0

High Carbon, Heat Treated:
6 in. and shorter:

⅝ in. and smaller..	20.0
¾, ⅞, and 1 in. ...	+ 5.0

Longer than 6 in.:

⅝ in. and smaller..	+19.0
¾, ⅞, and 1 in. ...	+39.0

Flat Head Capscrews:
¾ in. and smaller, 6 in. and shorter .. +85.0

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:
6 in. and shorter... + 5.0
Longer than 6 in. .. +29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.85 ⅞ in. and smaller by 6 in. and shorter: 15.0%

PRESTRESSED STRAND

Steel 5½on6 — Kasarda
(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Strand Diameter, Inches				
	1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$32.15	$48.20	$61.55	$81.10	$105.65
Buffalo W12	32.15	48.20	61.55	81.10	105.65
Cleveland A7	32.15	48.20	61.55	81.10	....
KansasCity,Mo. U3	32.15	48.20	61.55	81.10	105.65
Monessen,Pa. P16	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	32.15	48.20	61.55	81.10	105.65
Pittsburg,Calif. C11	....	48.20	61.55	81.10	....
Pueblo,Colo. W12	32.15	48.20	61.55	81.10	105.65
Roebling,N.J. R5	32.15	48.20	61.55	81.10	105.65
St.Louis L8	32.15	48.20	61.55	81.10	105.65
Waukegan,Ill. A7	32.15	48.20	61.55	81.10	105.65

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington, W.Va. C15	....	....	....	6.50
Johnstown,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.22
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	7.025
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh P14	14.75
Seattle B3	15.85

SCREW SPIKES
Lebanon,Pa. B2 ..... 15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1½ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 4 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.395c.
(27) Bar mill also.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.875c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.655c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	0.5	+26	+11.5	+35	+22	+43.5	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1¼		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on current price of zinc (11.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	39.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	40.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	41.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	42.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	44.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	45.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	45.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	53.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	46.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	55.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	66.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	87.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	87.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	71.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	79.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	88.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	54.75	65.50	65.50
330	....	....	118.75	....	132.00	138.50	135.50	149.25	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	64.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	30.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	32.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	30.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	31.25	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	40.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	31.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	31.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	41.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co., Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	34.75	40.65

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3, nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	...	T-1	1.840
18	4	2	....	...	T-2	2.005
13.5	4	3	....	...	T-3	2.105
18.25	4.25	1	4.75	...	T-4	2.545
18	4	2	9	...	T-5	2.915
20.25	4.25	1.6	12.25	...	T-6	4.330
13.75	3.75	2	5	...	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward,Ala. W15	62.50*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio., deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Neville Island,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 11.01-11.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood,Tenn. T3 (Phos. 0.055% max)	73.00
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Neville Island,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24#	....	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	....	9.05	9.45	11.85#	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	8.64	8.89	10.99
Boston	9.31	10.40	11.39	53.50	9.73	10.11	13.39#	15.71	10.01	10.02	11.85
Buffalo	8.40	9.60	11.30	55.98	8.75	9.15	11.45#	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.50	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.55	53.43	8.83	9.31	11.53#	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	10.20	52.33	8.63	9.10	11.25#	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	10.87	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.20	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.70[2]	10.80[2]	12.15[3]	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[3]	11.30[3]
Memphis, Tenn.	8.55	9.80	10.45	....	8.58	9.32	11.96#	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	10.64	....	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.64	9.99	13.25#	15.50	9.74	9.77	11.06
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.20	9.25	11.34	52.71	9.25	9.40	11.95#	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.85	52.00	8.61	8.99	11.25#	15.05	9.00	8.89	10.26
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.63	9.83	10.88	....	8.89	9.37	9.78	15.43	9.48	9.27	10.68
St. Paul	8.79	10.04	11.09	....	8.94	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.00	55.10	9.75	10.15	13.00	16.00	9.85	10.00	12.35
Seattle	9.95	11.52[3]	10.95[3]	55.02	10.00	10.10	14.70	16.80[3]	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.55	12.20	57.38	10.00	10.10	14.70	16.80	9.80	9.70	12.10
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted: cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10 000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill. $168; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $253; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $310.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bertsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $26.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	*23.00*
N. African hematite (spot)	nom
Brazilian iron ore, 68.5%	26.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$8.25-8.75*
Domestic, concentrates f.o.b. milling points	16.00-17.00†

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian (export tax included) $1.10 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00
South African Transvaal	
44% no ratio	22.00-23.00
48% no ratio	29.00-31.00
Turkish	
48% 3:1	51.00-55.00
Domestic	
Rail nearest seller	
18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over..	10.50
F.o.b. Riverton or Camden, N. J., west of Mississippi River.	9.50
Sponge Iron, Domestic, 99 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron, Melting stock, 99.87% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)..	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh	
Aluminum: Atomized, 500-lb drum, freight allowed	
Carlots	38.50
Ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	32.80-48.80†
Bronze, 5000-lb lots	49.60-53.70†
Copper: Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	50.80-55.30†
Phosphor-Copper, 5000-lb lots	61.80
Copper (atomized) 5000-lb lots	42.30-50.80†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.00*
Zinc, 5000-lb lots	18.50-31.70‡
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal:	
1000 lb and over	3.15
Less than 1000 lb..	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens.	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.18
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Ore within $5.15 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	31.00‡
Toluene, one deg (deld.)	25.00*
Industrial xylene	29.00§
Per ton, bulk, ovens	
Ammonium sulfate	$32.00-35.00†
Cents per pound, producing point	
Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.	

Effective: *Apr. 12; †July 1; ‡July 8; §Aug. 12.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.05	$5.05	$4.95	$5.40
Bar Size Angles	5.05	5.05	5.00	5.38
Structural Angles	5.05	5.05	5.05	5.38
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	5.40	5.40	5.35	5.90
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.05	5.18	5.00	5.35
Wire Rods, O.H. Cold Heading Quality No. 5	5.80	5.93	5.75	6.05
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, SM x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si. 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.6c per lb of contained Si. Packed c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca), C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c

BORON ALLOYS

Ferroboron: 100 lb or more packed, (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20 Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l. packed, bags 16c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c, 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Contract, carload, bulk 8c per lb of briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l., bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.47 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb, f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lots $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.76 in all sizes except powdered which is $1.83.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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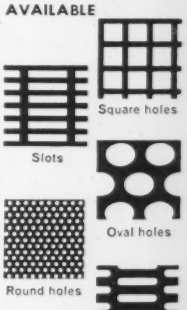

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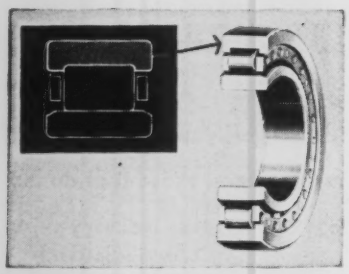
STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, O.

Loggers' "weight-lifter" tests bearing stamina!



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Two parallel shoulders made integral with the outer race, as shown in gray above, increase rigidity and durability—keep rollers in proper alignment. Precision-ground rollers and races give quieter, smoother operation.

Tossing around logs 6 feet in diameter like toothpicks is no job for a softie! This machine has to be *built* for it right from the start—*right down to the bearings*. And that goes, too, for the trucks which haul these back-breaking giants over the most rugged terrain. Bower tapered and straight roller bearings have been *engineered* for just such work as this—to last longer, perform better under any road or load condition. Painstaking quality control plus basic bearing design refinements—like those shown at left—have reduced Bower Bearing failure to a practical minimum. *Whatever* your product, if it uses bearings, specify Bower! There's a complete line of tapered, straight and journal roller bearings for every field of transportation and industry.

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FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 14, MICHIGAN

BOWER ROLLER BEARINGS

Scrap Index Turns Upward Again

STEEL's composite on prime grades registers a 33 cent per ton advance to $42.33. Recent decline due to sluggish consumer demand is short-lived

Scrap Prices, Page 188

Pittsburgh—Prices of most grades are up about $1 on broker buying. Fisher Body Div.'s (General Motors Corp.) factory bundles brought $49 a ton (vs. $47 last month). Buyers seem confident that they can unload the scrap at a profit. Prices on railroad material are mixed. B&O sold No. 1 heavy melting for $46.75 (up 50 cents) and specialties for $51.25 (off 25 cents). Turnings are in demand again, and prices are up about $3.

Chicago—The local market displays more firmness, but consumer buying is too restricted to provide a price test. One large mill has reaffirmed $45 a ton, delivered, as its November buying price for No. 1 heavy melting steel of industrial origin. A week ago, an auto body plant sold No. 1 factory bundles at $45 on track, which figures to $48, delivered. It represents an increase of $2 over previous transactions. Brokers are bidding $1 a ton more to dealers, and scattered out-of-the-district sales show prices paid to be $1 to $2 above current market quotations.

Philadelphia — While trading is light, prices are steady, indicating a fair balance between supply and demand in the major grades. Business in borings and turnings remains so dull that quoted prices are largely nominal. There is no export demand here, and none is in prospect for the immediate future.

New York—Brokers' buying prices are easy, but they are unchanged. Foreign demand is off, and domestic consumers are showing little interest in brokers' offerings. Stainless steel scrap is coming out more freely due to the recent price advances.

Cleveland—Industrial lists commanded higher prices on the latest closings, adding new strength to the general price structure. Some sellers advanced their prices $1 to $2 a ton, but there's still no pressing demand from consumers for dealer open hearth material. The foundry grades continue to move well, and some improvement in demand for the blast furnace grades (borings and turnings) is noted.

Youngstown — A leading steelmaker here bought some industrial No. 1 heavy melting steel scrap at $46, an advance of $1 a ton over the last purchase, but the sale has had little effect on dealer scrap.

Detroit—Auto lists opened low and closed high. Chevrolet's lists were off $1.50, while Chrysler's lists were up $1. Turnings and foundry grades showed strength. Some dealers reported auto cast going as high as $50 on some tonnage.

Buffalo—The leading scrap consumer here has re-entered the market, reportedly offering $36 for No. 1 heavy melting, $30 for No. 2 heavy melting, and $28 for No. 2 bundles. Those are the same prices that prevailed during October.

Cincinnati—Prices on the leading steelmaking grades of scrap moved up $1 a ton as area mills entered the market. The increase in brokers' quotations raised No. 1 heavy melting to $38.50-$49.50.

St. Louis—Demand is fair, and with other markets moving higher, there's some thought here that local prices may advance.

Birmingham—Limited trading is reported here. Steel mills stocked heavily early in October, and most electric furnaces hold substantial inventories.

Houston—The scrap market continues in balance. Prices are unchanged with brokers working on a large mill order placed late last month.

San Francisco—The market entered the new month with no changes in posted prices.

Seattle—The mills in this district are well stocked with scrap and the tonnage turnover continues small.

Imported Steel Pours in

Imported steel is being shipped to Gulf ports in substantial quantities. European producers are shipping more steel here because of cancellations from Iron Curtain countries. The push has been on since early October when foreign steelmakers cut their prices $2 to $3 a ton. The chief imported items are reinforcing steel and wire products. Recently, Japanese plates have been offered in the Houston market.

Refractories . . .

Refractories Prices, Page 183

The J. H. France Refractories Co., Snow Shoe, Pa., has added a line of metal and brick anchors for customers using refractory castables and plastic firebrick in the refinery, iron and steel, glass, municipal, and similar industries.

Six anchor and hangar designs for use with either straight castables or plastic firebrick construction, or combination walls of firebrick and specialty products, are included. The assemblies are designated Metal Anchor assemblies 200, 300, 500, 600, and 700, and Brick Anchor assembly 400.

The new anchors are available in cast iron and alloy, dependent upon construction requirements.

Ferroalloys . . .

Ferroalloy Prices, Page 184

Prices on most molybdenum products were raised about 5 per cent on Nov. 1 by Climax Molybdenum Co., New York, a division of American Metal Climax Inc. Typical prices, per pound of molybdenum contained, are: Molybdenite concentrate $1.25, canned molybdic oxide $1.47, and ferromolybdenum $1.76.

Sellers of foreign ferromanganese continue to market aggressively in this country. Tonnage is coming from Japan, France, Yugoslavia, and West Germany. The domestic market for ferromanganese is being undercut $40 a ton and more.

E. J. Lavino & Co. plans to relight its ferromanganese furnace at Sheridan, Pa., on Nov. 15.

Structural Shapes . . .

Structural Shape Prices, Page 177

While a substantial amount of new work is being figured, structural steel demand is easing seasonally.

Competition among fabricators is

(*Please turn to Page* 193)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Nov. 5, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Nov. 5	$42.33
Oct. 29	42.00
Oct. Avg.	42.25
Nov. 1957	33.17
Nov. 1953	35.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*44.00-45.00*
No. 2 heavy melting	*35.00-36.00*
No. 1 dealer bundles	*44.00-45.00*
No. 2 bundles	31.00-32.00
No. 1 busheling	*44.00-45.00*
No. 1 factory bundles	*49.00-50.00*
Machine shop turnings	*23.00-24.00*
Mixed borings, turnings	*23.00-24.00*
Short shovel turnings	*27.00-28.00*
Cast iron borings	*27.00-28.00*
Cut structurals:	
2 ft and under	*49.00-50.00*
3 ft lengths	*48.00-49.00*
Heavy turnings	34.00-35.00
Punchings & plate scrap	*49.00-50.00*
Electric furnace bundles	*49.00-50.00*

Cast Iron Grades

No. 1 cupola	*45.00-46.00*
Stove plate	41.00-42.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	39.00-40.00
Drop broken machinery	*52.00-53.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00-48.00*
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	54.00-55.00
Railroad specialties	52.00-53.00
Angles, splice bars	52.00-53.00
Rails, rerolling	60.00-61.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	125.00-130.00
430 bundles & solids	125.00-130.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt, indus.	43.00-45.00
No. 1 heavy melt, dealer	40.00-41.00
No. 2 heavy melting	34.00-35.00
No. 1 factory bundles	*46.00-47.00*
No. 1 dealer bundles	*42.00-43.00*
No. 2 bundles	28.00-29.00
No. 1 busheling, indus.	43.00-45.00
No. 1 busheling, dealer	40.00-41.00
Machine shop turnings	21.00-22.00
Mixed borings, turnings	23.00-24.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Cut structurals, 3 ft	46.00-47.00
Punchings & plate scrap	47.00-48.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	43.00-44.00
Unstripped motor blocks	37.00-38.00
Clean auto cast	51.00-52.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R. R. malleable	55.00-56.00
Rails, 2 ft and under	58.00-59.00
Rails, 18 in. and under	59.00-60.00
Angles, splice bars	54.00-55.00
Axles	67.00-68.00
Rails, rerolling	62.00

Stainless Steel Scrap

18-8 bundles & solids	215.00-220.00
18-8 turnings	120.00-125.00
430 bundles & solids	115.00-120.00
430 turnings	55.00-60.00

YOUNGSTOWN

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	30.00-31.00
No. 1 busheling	43.00-44.00
No. 1 bundles	43.00-44.00
No. 2 bundles	30.00-31.00
Machine shop turnings	15.00-16.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	*46.00-47.00*
Electric furnace bundles	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*46.00-47.00*

CLEVELAND

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	*46.00-47.00*
No. 1 bundles	39.50-40.50
No. 2 bundles	30.50-31.50
No. 1 busheling	39.50-40.50
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	*42.00-43.00*
Cut structurals, plates 2 ft and under	*48.00-49.00*
Low phos. punchings & plate	41.00-42.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	*42.50-43.50*

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00
Heavy breakable cast	36.00-37.00
Stove plate	43.00-44.00
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	*63.00-64.00*
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	200.00-210.00
18-8 turnings	110.00-115.00
430 clips, bundles, solids	*105.00-115.00*
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	38.00
No. 2 heavy melting	36.00
No. 1 bundles	40.00
No. 2 bundles	29.00
No. 1 busheling	40.00
Machine shop turnings	20.00†
Short shovel turnings	22.00†

Cast Iron Grades

No. 1 cupola	49.00
Charging box cast	40.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	49.00
Stove plate	46.00

Railroad Scrap

No. 1 R.R. heavy melt	45.50
Rails, 18 in. and under	52.00†
Rails, random lengths	*48.00*
Rails, rerolling	62.25
Angles, splice bars	*48.00*

BIRMINGHAM

No. 1 heavy melting	38.00-39.00
No. 2 heavy melting	30.00-31.00†
No. 1 bundles	38.00-39.00
No. 2 bundles	*23.00-24.00*
No. 1 busheling	38.00-39.00
Cast iron borings	13.00-14.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bars, crops and plates	45.00-46.00
Structurals & plates	44.00-45.00
Electric furnace bundles	40.00-41.00
Electric furnace:	
2 ft and under	38.00-39.00
3 ft and under	37.00-38.00

Cast Iron Grades

No. 1 cupola	54.00-55.00
Stove plate	53.00-54.00
Unstripped motor blocks	43.00-44.00
Charging box cast	29.00-30.00
No. 1 wheels	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
Rails, 18 in. and under	52.00-53.00
Rails, rerolling	*58.00-59.00*
Rails, random lengths	*47.00-48.00*
Angles, splice bars	48.00-49.00

PHILADELPHIA

No. 1 heavy melting	40.00
No. 2 heavy melting	36.00
No. 1 bundles	40.00
No. 2 bundles	24.00
No. 1 busheling	40.00
Electric furnace bundles	42.00-43.00
Mixed borings, turnings	20.00-21.00†
Short shovel turnings	24.00-25.00†
Machine shop turnings	20.00-21.00†
Heavy turnings	34.00-35.00†
Structurals & plate	44.00-45.00
Couplers, springs, wheels	48.00
Rail crops, 2 ft & under	57.00-59.00

Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast	43.00
Malleable	58.00
Drop broken machinery	49.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	31.00-32.00
No. 2 bundles	19.00-20.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	14.00-15.00
Low phos. (structurals & plates)	37.00-38.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Unstripped motor blocks	28.00-29.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	190.00-195.00
18-8 borings, turnings	90.00-95.00
410 sheets, clips, solids	65.00-70.00
430 sheets, clips, solids	85.00-90.00

BUFFALO

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	35.00-36.00
No. 2 bundles	27.00-28.00
No. 1 busheling	35.00-36.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	15.00-16.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 2 ft and under	41.00-42.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	44.00-45.00
No. 1 machinery	48.00-49.00

Railroad Scrap

Rails, random lengths	51.00-52.00
Rails, 3 ft and under	57.00-58.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*38.50-39.50*
No. 2 heavy melting	*33.50-34.50*
No. 1 bundles	*38.50-39.50*
No. 2 bundles	*26.00-27.00*
No. 1 busheling	*38.50-39.50*
Machine shop turnings	*19.00-20.00*
Mixed borings, turnings	*17.00-20.00*
Short shovel turnings	*22.00-23.00*
Cast iron borings	*19.00-20.00*
Low phos, 18 in.	*46.00-47.00*

Cast Iron Grades

No. 1 cupola	*45.00-46.00*
Heavy breakable cast	*38.00-39.00*
Charging box cast	*36.00-37.00*
Drop broken machinery	47.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	49.00-50.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	40.00
No. 2 heavy melting	34.00
No. 1 bundles	40.00
No. 2 bundles	25.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	45.50

Cast Iron Grades

No. 1 cupola	47.00
Heavy breakable	30.00†
Foundry malleable	41.00
Unstripped motor blocks	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00†

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	23.00-24.00
No. 1 bundles	29.00-30.00
No. 2 bundles	17.00-18.00†
No. 1 busheling	29.00-30.00
Machine shop turnings	9.00-10.00
Short shovel turnings	12.00-13.00
No. 1 cast	33.00-34.00
Mixed cupola cast	33.00-34.00
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*33.00-34.00*
No. 2 heavy melting	21.00-22.00
No. 1 bundles	*34.00-35.00*
No. 2 bundles	*21.00-22.00*
No. 1 busheling	*33.00-34.00*
Machine shop turnings	*11.00-12.00*
Mixed borings, turnings	*14.00-15.00*
Short shovel turnings	*15.00-16.00*
Punchings & plate	*33.00-34.00*

Cast Iron Grades

No. 1 cupola	*44.00-45.00*
Stove plate	*36.00-37.00*
Charging box cast	*37.00-38.00*
Heavy breakable	*35.00-36.00*
Unstripped motor blocks	*21.00-22.00*
Clean auto cast	*46.00-47.00*

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	31.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	23.00†
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	17.00
Machine shop turnings	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	39.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	28.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

*Brokers' buying price.
†Nominal.
‡F.o.b. Hamilton, Ont.

THE NEW LOGEMANN MODEL 500-PF HIGH SPEED SCRAP PRESS

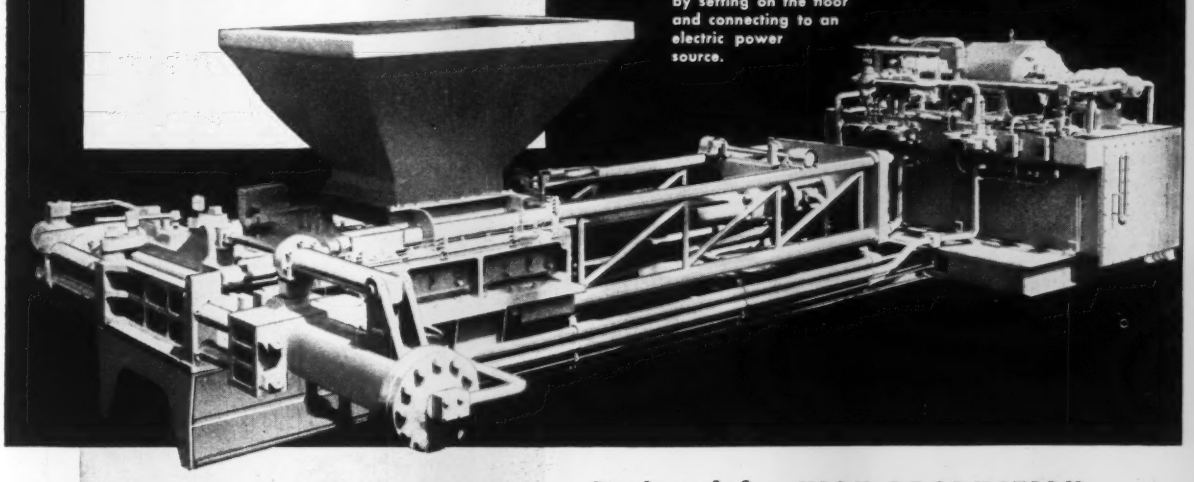
FAST LOADING! FAST BALING! FAST DISCHARGE!

Here is a two-compression, side-ejection press designed for high production — up to 240 bales per hour.

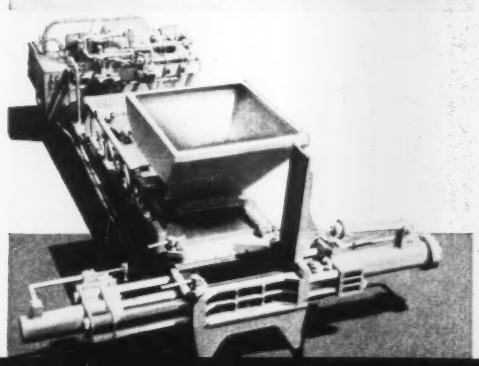
It is able to bale sheet clips, stamping skeletons, wire, cans, steel, copper, brass and aluminum scrap.

No pit required for installation. Can be operated by setting on the floor and connecting to an electric power source.

The LOGEMANN Model 500-PF press is a high-speed, high-density horizontal two compression unit. It is filled from a hopper supermounted above the compression box and discharges the compressed bale through a side opening. The operating cycle is automatic and continuous, or manual at the option of the operator.



BALE SIZE	6" x 12" x 8" (VARIABLE)
BALE WEIGHT	40 LBS. AVERAGE
PRODUCTION	UP TO 240 BALES PER HOUR



Designed for HIGH PRODUCTION

Here is a new high speed scrap press . . . geared for high production and extra baling profits for you. Famous "engineered" features, proved through actual operation, are built into this press to give you constant, uninterrupted service. It's a top-loading side-ejection press that can handle a variety of scrap. Write for the new Bulletin No. 220; it will give you complete information concerning design, pumping unit, valve assembly and accessory equipment. When making your inquiries please state the nature of your scrap and the tonnage desired.

LOGEMANN BROTHERS CO.

3126 W. BURLEIGH STREET • MILWAUKEE 45, WISCONSIN

Aluminum Entering New Era

Producers believe they can further compete with lower cost materials by demonstrating savings in labor and fabrication. Production will continue to exceed demand

Nonferrous Metal Prices, Pages 192 & 193

TWO IMPORTANT changes are taking place in the aluminum industry which will have far-reaching effects on marketing of the light metal.

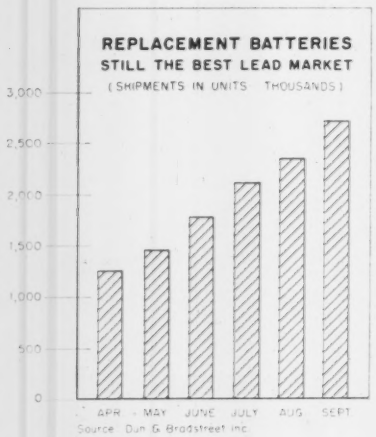
• No. 1—Up until now, aluminum's major markets have been in the replacement of more expensive materials. The recipe for the future, believe industry men, will be substitution of aluminum for materials that have an initial lower per-pound cost. One metalman cites this example: Gray iron is much cheaper than aluminum, yet automakers are swinging away from gray iron castings toward aluminum diecastings for pump housings. Reason: The gray iron unit is only 15 per cent completed after casting; its aluminum counterpart is 85 per cent finished.

Aluminum people say their argument of less labor and finishing costs will more and more overcome the competitive disadvantage of a higher initial price in the bid for new markets. To prove the point, industry scientists delve into such studies as inks, lacquers, and adhesives to show customers how to make products more cheaply with aluminum.

• No. 2—Producers expect to keep capacity ahead of demand and make the industry "market oriented" instead of "production oriented." The theory: Have sufficient capacity to assure large potential users an adequate long term supply.

Until a short time ago, demand exceeded supply. Now, the domestic industry has a primary ingot capacity of 2,094,000 tons plus an additional 510,500 tons under construction.

That is especially significant when you realize optimistic estimates peg 1958 consumption at 1.75 million tons (a 9 per cent dip from 1957). Next year, demand will be up 10 to 20 per cent, believes E. M. Strauss Jr., manager of commercial research for the Aluminum Co. of America. He breaks 1959 sales down like this: Construction, 485,000 tons; transportation, 370,000; consumer durable goods, 250,000; aircraft and missiles, 120,000; electrical and communication equipment, 200,000; nonelectrical machinery, 220,000; containers and packaging, 110,000; and miscellaneous, 300,000. The total is a little over 2 million tons, well under the capacity the industry has earmarked.



African Miners Settle

Users of copper breathed a sigh of relief last week when African miners ended the walkout that tied up production for 53 days. Losses are estimated at 60,000-65,000 tons.

The only strike now on the books is in Canada, resulting in 13,000 tons of lost output since Sept. 24.

Several countermoves had been made to partially compensate for less copper supply at a time when demand is on the increase: Major U. S. producers had gone to six and seven day workweeks. The large Belgian producer, Katanga, had upped its output by 1800 tons a month, restoring a production cut made last January. The British government got into the act last week with an announcement it will release 10,000 tons of stockpile copper between mid-November and the end of January plus a small amount of copper cake. All but 2000 lb of the stockpile metal will be offered to the original suppliers. The rest will be offered on open tender.

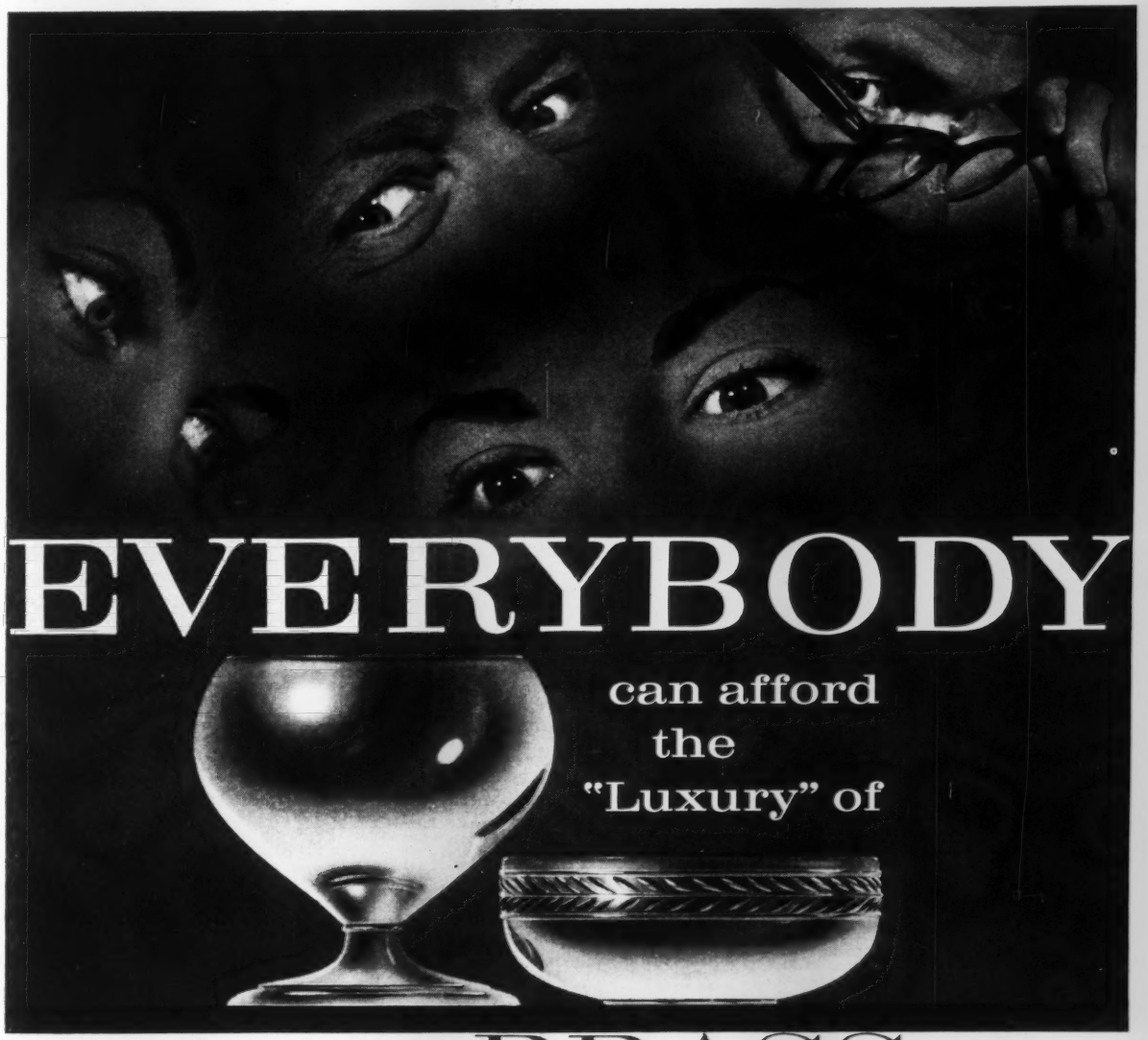
Although these actions were taken before settlement of the African strike, they should hold up. Observers point out it will be at least 60 days before African mine production can be translated into refined copper. Overseas users have worked stocks down to a low level.

It's unlikely there will be any early change in U. S. quotations. Both the custom smelter price at 30 cents a pound and the primary price at 29 cents should hold.

NONFERROUS PRICE RECORD

	Price Nov. 5	Last Change	Previous Price	Oct. Avg	Sept. Avg	Nov., 1957 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.700	26.000
Copper	29.00-30.00	Oct. 24, 1958	27.50-30.00	28.058	26.428	26.217
Lead	12.80	Oct. 14, 1958	12.30	12.473	10.730	13.300
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	98.00	Nov. 5, 1958	97.75	96.500	94.120	89.288
Zinc	11.00	Oct. 8, 1958	10.50	10.865	10.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.



BRASS

Brass is *not* a luxury. Even though some of the world's priceless heirlooms and antiques are fashioned from everlasting Brass, *everyone* can afford the rich beauty of the golden-yellow metal.

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Products shown are made by Brasco Products, Div. of Linden Metal Products, Inc.

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Bristol Brass has offices and warehouses in Boston, Buffalo, Chicago, Cleveland, Dayton, Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, Syracuse
and for BRASS FORGINGS, too ACCURATE BRASS CORP. *(Subsidiary of The Bristol Brass Corp.)*, Bristol, Conn.

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.45 per lb deld.

Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 29.00 deld.; custom smelters, 30.00; lake, 29.00 deld.; fire refined, 28.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 12.80; chemical, 12.90; corroding, 12.90, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35-25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, 9Z91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $230-233 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-17 per troy oz.

Platinum: $57-60 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 90.125 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot, 98.00; prompt, 97.875.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.62-1.82; grade A-2 (0.5% Fe max.), $1.70 per lb.

Tungsten: Powder, 89.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 13.50; No. 2, 13.75; No. 5, 14.00 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.50-25.25; No. 12 foundry alloy (No. 2 grade), 21.50-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.50; grade 3, 20.50; grade 4, 18.00.

Brass Ingot: Red brass, No. 115, 29.00; tin bronze, No. 225, 38.00; No. 245, 32.75; high-leaded tin bronze, No. 305, 33.25; No. 1 yellow, No. 405, 24.00; manganese bronze, No. 421, 25.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.885, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.865, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 34.35; l.c.l., 34.98. Weatherproof, 20,000-lb lots, 35.54; l.c.l., 36.29.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $18.50 per cwt; pipe, full coils, $18.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-10.50; forging billets, $3.80-4.35; hot-rolled and forged bars, $5.10-6.25.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R., strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.350	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24.72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, .25-.30 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 23.75-24.25; No. 2 heavy copper and wire, 22.00-22.50; light copper, 19.75-20.25; No. 1 composition red brass, 17.50-18.00; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 29.00c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	52.13b	49.36c	....	52.39	25.000	25.000	24.250
Yellow Brass	45.57	30.32d	46.11	48.48	17.000	16.750	15.250
Low Brass, 80%	48.23	48.17	48.77	51.04	21.250	21.000	20.500
Red Brass, 85%	49.17	49.11	49.71	51.98	22.125	21.875	21.375
Com. Bronze, 90%	50.65	50.59	51.19	53.21	22.875	22.625	22.125
Manganese Bronze	53.44	47.64	58.08	....	17.750	17.500	16.875
Muntz Metal	47.85	43.66	....	....	17.875	17.625	17.125
Naval Brass	49.74	44.05	56.80	52.90	17.625	17.375	16.875
Silicon Bronze	56.77	55.96	56.81	62.13	24.625	24.625	23.625
Nickel Silver, 10%	60.70	63.03	63.03	....	23.875	23.625	11.937
Phos. Bronze	71.09	71.59	71.59	72.77	25.875	25.625	24.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 16.50-17.00, new brass clippings, 16.50-17.50; light brass, 12.00-12.50; heavy yellow brass, 13.00-13.50; new brass rod ends, 13.75-14.25; auto radiators, unsweated, 14.25-15.25; cocks and faucets, 14.00-14.50; brass pipe, 14.25-14.75.

Lead: Heavy, 8.50-9.00; battery plates, 4.75-5.25; linotype and stereotype, 10.50-11.00; electrotype, 9.00-9.50; mixed babbitt, 9.50-10.00.

Monel: Clippings, 32.00-34.00; old sheets, 28.00-30.00; turnings, 22.00-24.00; rods, 32.00-34.00.

Nickel: Sheets and clips, 52.00-55.00; rolled anodes, 52.00-55.00; turnings, 37.00-40.00; rod ends, 52.00-55.00.

Zinc: Old zinc, 4.00-4.25; new diecast scrap, 3.75-4.00; old diecast scrap, 2.50-2.75.

Aluminum: Old castings and sheets, 9.25-9.75; clean borings and turnings, 6.25-6.75; segregrated low copper clips, 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.75-13.25; mixed high copper clips, 11.50-12.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.00-11.50; clean borings and turnings, 10.00-10.50; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.50-16.00; mixed low copper clips, 16.00-16.50; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 11.00-11.50; clean borings and turnings, 10.00-10.50; segregated low copper clips, 15.00-15.50; segregated high copper clips, 13.50-14.00; mixed low copper clips, 14.50-15.00; mixed high copper clips, 13.00-13.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 55.00; light scrap, 50.00; turnings and borings, 35.00.

Copper and Brass: No. 1 heavy copper and wire, 25.50; No. 2 heavy copper and wire, 24.50; light copper, 22.25; refinery brass (60% copper) per dry copper content, 23.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 25.50; No. 2 heavy copper and wire, 24.50; light copper, 22.25; No. 1 composition borings, 20.00; No. 1 composition solids, 20.50; heavy yellow brass solids, 14.50; yellow brass turnings, 13.50; radiators, 16.75.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.45.

Copper: Flat-rolled, 45.79; oval, 44.00; 5000-10,000 lb; electrodeposited, 38.50, 2000-5000 lb lots; cast, 41.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25, 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 116.50; 200-499 lb, 115.00; 500-999 lb, 114.50; 1000 lb or more, 114.00.

Zinc: Balls, 17.50; flat tops, 17.50; flats, 20.25; ovals, 19.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.45 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 14.65; 2000-5900 lb, 12.65; 6000-11,900 lb, 12.40; 12,000-22,900 lb, 12.15; 23,000 lb or more, 11.65.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 77.40; 100-600 lb, 68.20; 700-1900 lb, 65.50; 2000-9900 lb, 63.60; 10,000 lb or more, 62.30.

Stannous Chloride (anhydrous): 25 lb, 152.60; 100 lb, 147.70; 400 lb, 145.30; 800-19,900 lb, 104.40; 20,000 lb or more, 98.30.

Stannous Sulphate: Less than 500 lb, 137.80; 50 lb, 107.80; 100-1900 lb, 105.80; 2000 lb or more, 103.80.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page* 187)

increasing as their order backlogs shrink. Most shops, though, still have fairly good order books.

Some improvement in industrial inquiry for shapes is noted in the East, but the market is primarily being supported by bridge construction and other public work. Some I-beam bridges in New England have gone as low as 10.4 cents per pound delivered.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

29,000 tons, main tower building, Prudential Center, Boston, to American Bridge Div., U. S. Steel Corp., Pittsburgh.

10,000 tons, radio towers, Cutler, Maine, to Truscon Steel Div., Republic Steel Corp., Cleveland; John F. Beasley Co., Muskogee, Okla., general contractor.

4000 tons, municipal subwaywork, Christie Street, lower Manhattan, New York, through Johnson & Peter Kiewit, joint general contractors, to Schacht Steel Construction Inc., New York.

600 tons, state highway bridge, Concord-Hopkinton, N. H., to Lyons Iron Works, Manchester, N. H.; Lewis Sheyd Co., general contractor.

460 tons, state highway structures, Worcester, Mass., to West End Iron Works, Cambridge, Mass.; V. Barletta Construction Co., Boston, general contractor.

375 tons, state highway bridge, Enfield, Conn., to City Iron Works, Wethersfield, Conn.; Enfield Road Construction Co., Enfield, general contractor.

365 tons, including 165 tons of Grade M medium tensile, and 200 tons, I-beams, high tensile, Navy Purchasing Office, Washington, D. C., to Bethlehem Steel Co., Bethlehem, Pa.

160 tons, Oregon state traffic interchange, Klamath Falls, Oreg., to an unstated fabricator; Tom Lillebo, Reedsport, general contractor.

132 tons, bridge crane and miscellaneous, for Alaska Lumber & Pulp Co., Sitka, Alaska, to Ederer Engineering Co., Seattle.

130 tons, state highway bridge, Nashua, N. H., to Lyons Iron Works, Manchester, N. H.; George Brox Co., Dracut, Mass., general contractor.

100 tons, state highway bridge, Derby, Conn., to McDermott Steel Specialties Co., New Haven, Conn.; Mariani Construction Co., New Haven, general contractor.

STRUCTURAL STEEL PENDING

3265 tons, superstructure, Scudders Falls Bridge, over the Delaware River between Bucks County, Pa., and Mercer County, N. J.; Conduit & Foundation Co., Philadelphia, low on the general contract.

3000 tons, state bridgework, Allegheny County, Pa., Pittsburgh Bridge & Iron Works, Pittsburgh, low bidder.

2500 tons, American Rapids Bridge, Niagara Falls, N. Y., for New York State Power Authority; Bethlehem Steel Co., Bethlehem, Pa., low bidder.

2200 tons, state bridge, Westchester County, N. Y.; Poirier & McLane, New York, low on the general contract.

600 tons, state highway bridges, Longmeadow, Mass.

370 tons, state highway bridge, New Castle County, Delaware; bids closed Nov. 5.

275 tons, state highway bridge, Canterbury, N. H.

162 tons, 240-ft Chena River bridge, Fairbanks, Alaska; also 55 tons of reinforcing bars and an unstated tonnage of piling, government-furnished; bids to Bureau of Public Roads, Juneau, Alaska, Nov. 14.

REINFORCING BARS . . .

REINFORCING BARS PLACED

357 tons, Washington State College, Bellingham, Wash., to Joseph T. Ryerson & Son Inc., Seattle; Hebb & Narodick, Seattle, general contractor.

REINFORCING BARS PENDING

145 tons, Cloverdale Street state overcrossing, Seattle; Quigg Bros.-McDonald Inc., Hoquiam, Wash., general contract at $431,228.

100 tons plus, Washington State girder and slab bridges, Adams County; general contract to Walter G. Meyers & Sons, Spokane, Wash., low at $101,064.

PLATES . . .

PLATES PLACED

385 tons, high strength, Grade Hy-80, Navy Purchasing Office, Washington, D. C., to Lukens Steel Co., Coatesville, Pa.

180 tons, dimpled Type I, Navy Purchasing Office, Washington, D. C., to U. S. Steel Corp., Pittsburgh.

155 tons, dimpled Type I, Navy Purchasing Office, Washington, D. C., to Lukens Steel Co., Coatesville, Pa.

100 tons, high strength, Grade Hy-80, Navy Purchasing Office, Washington, D. C., Lukens Steel Co., Coatesville, Pa.; also, 70 tons, same grade, another contract.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Illinois Central, twenty 1750-hp diesel electric road switchers, to Electro-Motive Div., General Motors Corp., LaGrange, Ill.

RAILROAD CARS PLACED

New York Transit Authority, 110 subway cars, to ACF Industries Inc., New York.

Minneapolis & St. Louis, twenty 70-ton hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

CLASSIFIED

FOR SALE

MONEL BARS—30,000 POUNDS
1⅞ Inch Hexagon in Mill Lengths.
Attractive Price.
Box No. 700, STEEL
Penton Bldg., Cleveland 13, Ohio.

PERSONNEL WANTED
for
SMALL MERCHANT & RE-BAR ROLLING MILL AND MELT PLANT

Mill now being built in Fairbanks, Alaska, and will be in operation in April, 1959. Mill will roll mainly reinforcing bars and will produce during the months of April through October, but key personnel will be compensated on an annual basis.

Personnel inquiries requested for melters, chemists, rollers, superintendents, managers and lesser related positions. Please enclose full particulars, including picture and reference in first letter to

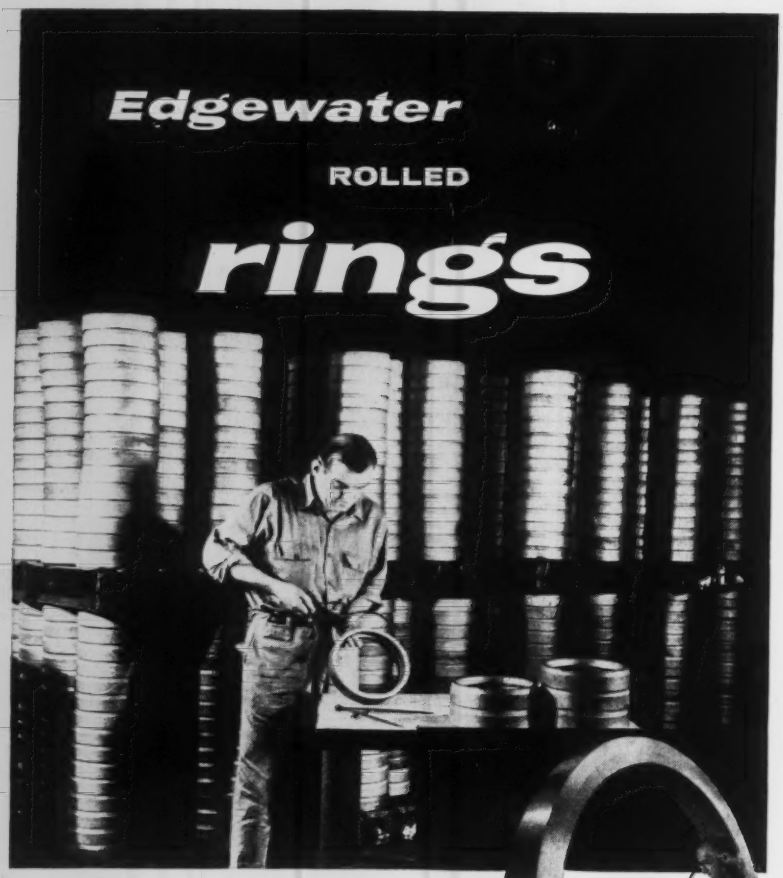
ALASKA STEEL MILLS, INC.
7707-7th Ave. So.
Seattle, Washington

Help Wanted

BLAST FURNACE SUPERVISOR—Experienced blast furnace operator to assist in start-up and initial operation of new furnace located in Spain. Duration of job is one year; however, applications for permanent position will be considered. Call or write KOPPERS COMPANY, INC., Freyn Department, Pittsburgh 19, Pennsylvania.

Positions Wanted

EXPERIENCED STEEL SALESMAN wants edge rolled and tubing line in Wisconsin. Write Box 599, STEEL, Penton Bldg., Cleveland 13, Ohio.



ACCURATE ROLLING

SAVES MACHINING

REDUCES SCRAP LOSS

ASSURES HIGH QUALITY

Cost reduction, achieved through the use of Edgewater steel rings, is due to savings in machining time and reduced scrap loss. Edgewater rolled rings are formed to tolerances so close that a minimum of machining is required. Weldless rings are rolled from solid steel blocks by a process which produces a wide variety of cross-section shapes. Diameters are from 5 to 145 inches.

WRITE for bulletin describing Edgewater Rings.

Edgewater Steel Company

P.O. Box 478 • Pittsburgh 30, Penna.

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PERFORATED METAL MEANS PERFECT SCREENS

Specially Fabricated for ALL INDUSTRIES BY

CHARLES MUNDT & SONS

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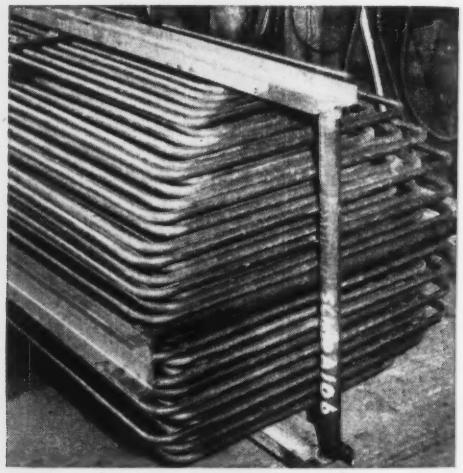
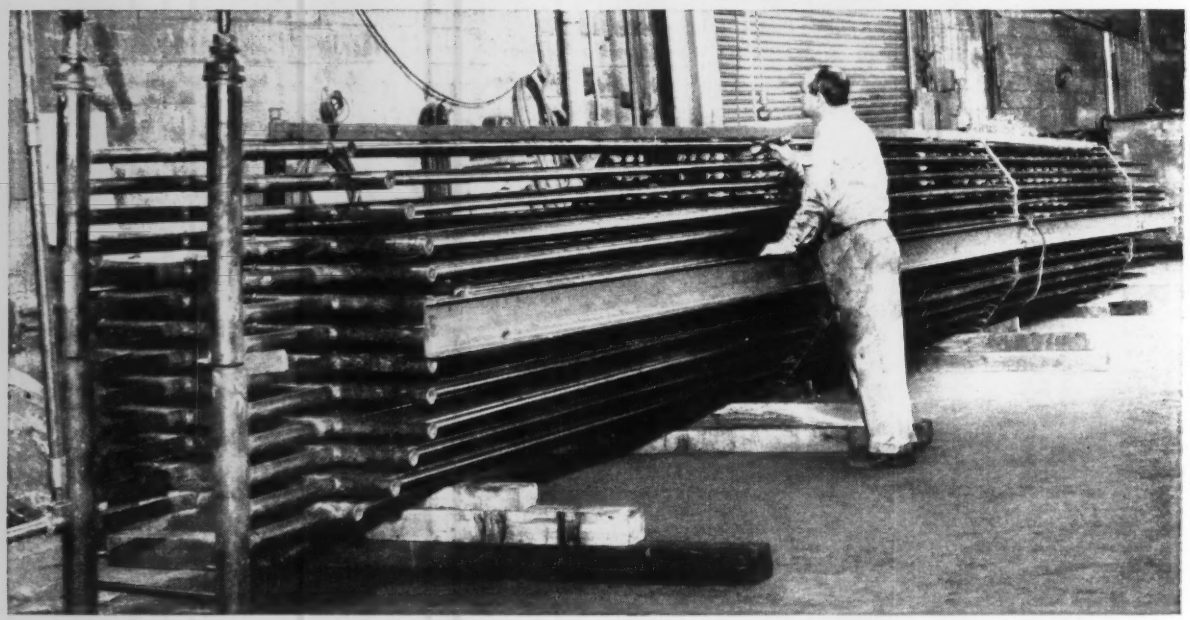
JERSEY CITY 4, N. J.
PHONE DELAWARE 3-6200

Send for Illustrated Catalog

One good turn deserves 192 others!





Pipe fabricators: Cornell & Underhill, Inc., Hoboken, N. J.

During fabrication, the USS* NATIONAL Seamless Steel Tubes used in this 8-ton heat exchanger were turned, or bent, 193 times! What's more, fabrication involved 584 pipe welds of various types and 1,720 inches of fillet welding. Mainly, the 35-foot-long, 5-foot-high bundle consists of ¾-inch Schedule 80 NATIONAL* Seamless Pressure Tubes; fabricated for the Solvay Process Division of Allied Chemical & Dye Corporation.

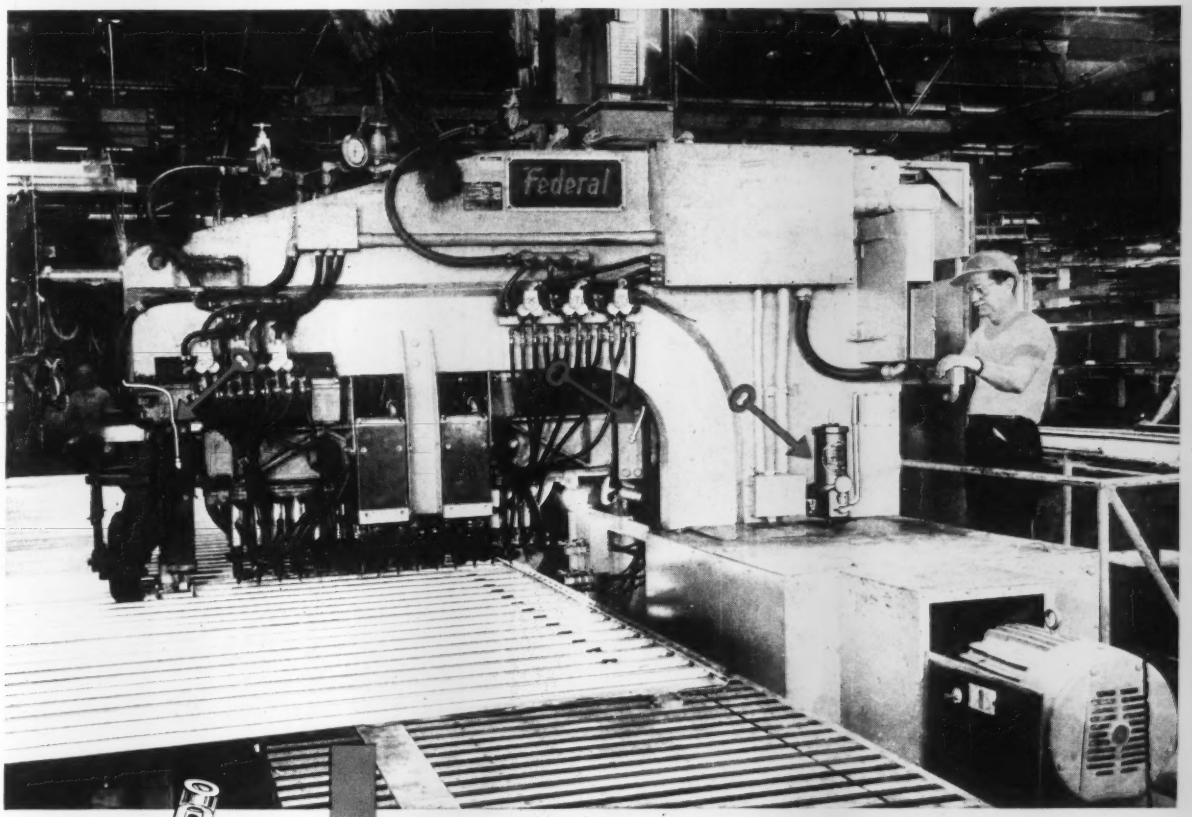
NATIONAL Seamless Pipe and Tubes are known the world over for safety and dependability. They are available in carbon through the various alloy and stainless grades. Get the complete story by sending for Bulletins 10 and 26. And, for technical assistance, our Mill Service Force is available for field consultation. Write to National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

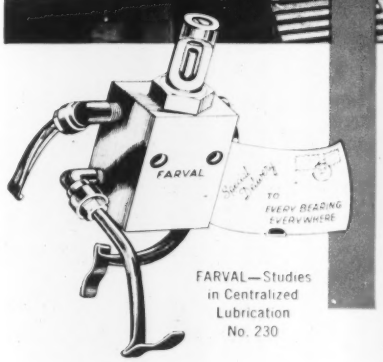
"The world's largest and most experienced manufacturer of tubular products—NATIONAL TUBE"

National Tube Division of USS United States Steel

*TRADEMARK

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors · United States Steel Supply Division
United States Steel Export Company, New York





FARVAL—Studies in Centralized Lubrication No. 230

Farval lubrication system protects bearings on Federal multi-gun welder

Resistance welders such as this multi-gun Federal, owe much of their effectiveness to their ability to adjust vertical movement of electrodes within exacting limits. Chosen to guard the essential bearings which give this Federal welder its precise control is a modern Farval lubrication system.

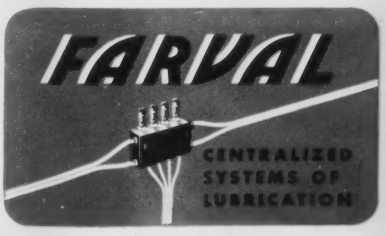
Across the country, Farval systems have dependably extended bearing life on all types of metalworking machinery . . . some for as long as 30 trouble-free years. That's because any Farval system —automatic or manually controlled—*insures* that measured amounts of lubricant are delivered to every desired point at *predetermined* intervals.

Let a Farval lubrication system help you extend vital bearing life. Ask for revised Bulletin 26-S. Write The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

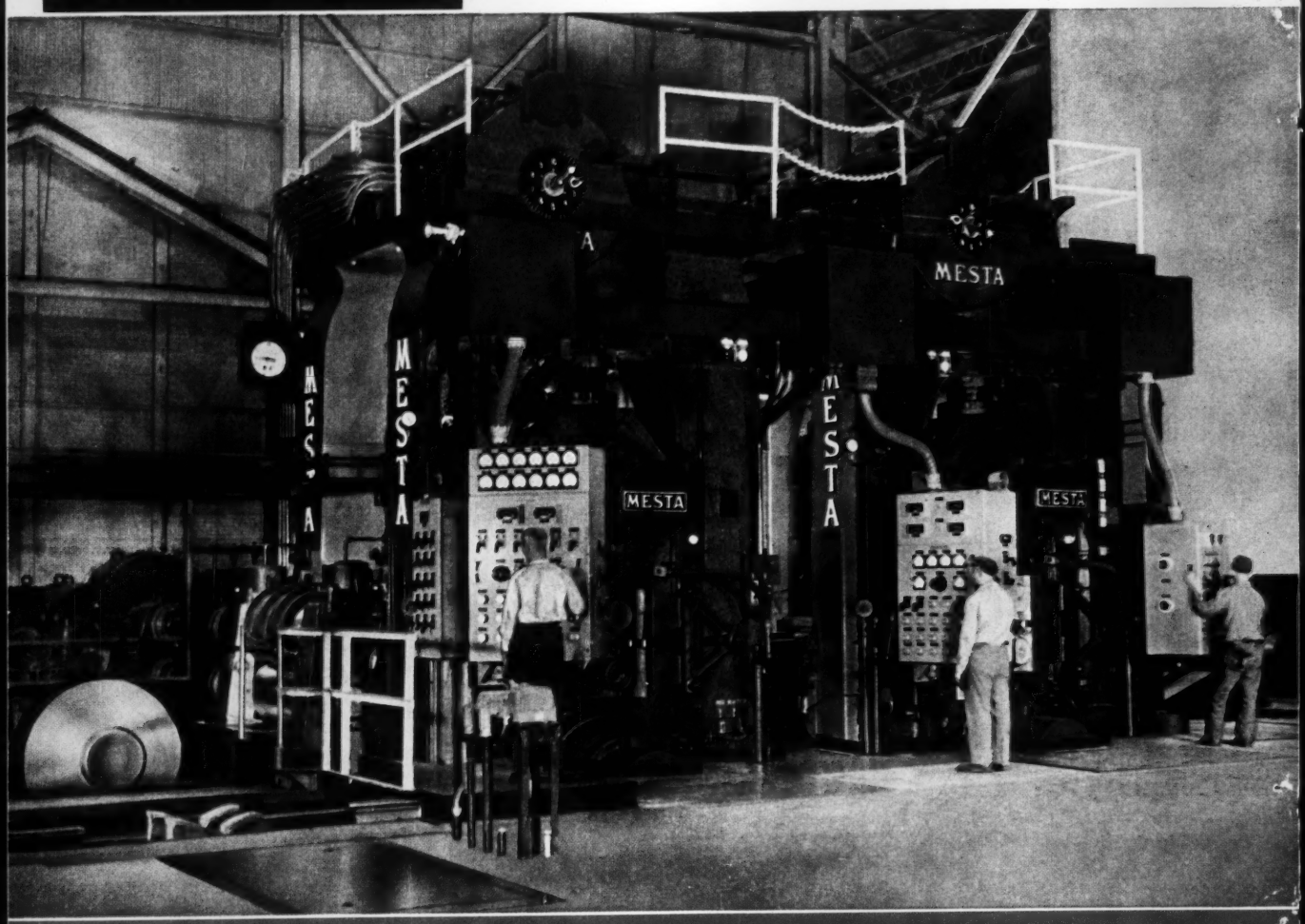
Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

KEYS TO ADEQUATE LUBRICATION

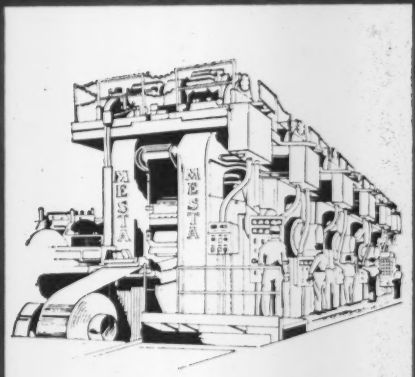
Wherever you see the sign of Farval —familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.



MESTA COLD MILLS



MESTA 51" Two-Stand Tandem Temper Mill Operating at the Yorkville Works of Wheeling Steel Corporation.



Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

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